Vol. 1072 Number 1

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

oute to:

PATENTS

November 4, 1986

U.S.
DEPARTMENT
OF COMMERCE

Patent
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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

November 4, 1986 Volume 1072 Number 1

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.
GENERAL INFORMATION concerning PATENTS.
GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.50 each; PLANT PATENTS in color, $6.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic PCT fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office was changed as of Nov. 1, 1986 and was announced in the *Official Gazette* at 1071 O.G. 22 on Oct. 21, 1986.

International PCT fees were changed due to differences in the exchange rate effective Nov. 1, 1986 and were announced in the *Official Gazette* at 1071 O.G. 22 on Oct. 21, 1986.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority	
—No corresponding prior U.S. national application filed:	420.00
—Corresponding prior U.S. national application filed:	250.00
European Patent Office as Searching Authority	
if paid before Nov. 1, 1986	930.00
if paid on or after Nov. 1, 1986	1015.00
International fees	
Basic fee (first 30 pages):	
if paid before Nov. 1, 1986	375.00
if paid on or after Nov. 1, 1986	430.00
Basic Supplemental fee (for each page over 30):	
if paid before Nov. 1, 1986	7.00
if paid on or after Nov. 1, 1986	8.00
Designation fee for the first 10 national or regional offices:	
if paid before Nov. 1, 1986	90.00
if paid on or after Nov. 1, 1986	105.00
Designation fee for 11th and subsequent designations:	No charge

DONALD J. QUIGG,
Sept. 30, 1986. *Assistant Secretary and Commissioner of Patents and Trademarks.*

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Nov. 1, 1983, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,412,357 through 4,413,356
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98–622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the pa-

tent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED AUGUST 17, 1986, DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,344,235	06/223,381	8/17/82
4,344,240	06/225,486	8/17/82
4,344,258	06/222,764	8/17/82
4,344,276	06/261,982	8/17/82
4,344,311	06/223,079	8/17/82
4,344,349	06/276,744	8/17/82
4,344,351	06/230,740	8/17/82
4,344,353	06/264,495	8/17/82
4,344,384	06/250,344	8/17/82
4,344,410	06/238,860	8/17/82
4,344,412	06/224,497	8/17/82
4,344,434	06/268,879	8/17/82
4,344,447	06/219,848	8/17/82
4,344,452	06/240,944	8/17/82
4,344,483	06/300,188	8/17/82
4,344,491	06/282,913	8/17/82
4,344,529	06/225,869	8/17/82
4,344,553	06/234,614	8/17/82
4,344,567	06/221,593	8/17/82
4,344,600	06/233,032	8/17/82
4,344,601	06/244,401	8/17/82
4,344,624	06/225,128	8/17/82
4,344,687	06/235,492	8/17/82
4,344,718	06/317,215	8/17/82
4,344,754	06/236,422	8/17/82
4,344,797	06/237,708	8/17/82
4,344,805	06/257,399	8/17/82
4,344,813	06/216,083	8/17/82
4,344,814	06/304,590	8/17/82
4,344,829	06/243,386	8/17/82
4,344,835	06/225,011	8/17/82
4,344,836	06/225,013	8/17/82
4,344,843	06/235,997	8/17/82
4,344,844	06/244,601	8/17/82
4,344,875	06/277,455	8/17/82
4,344,885	06/255,193	8/17/82
4,344,889	06/223,750	8/17/82
4,344,920	06/285,852	8/17/82
4,344,931	06/253,386	8/17/82
4,344,960	06/259,645	8/17/82
4,344,980	06/247,423	8/17/82
4,344,988	06/272,117	8/17/82
4,345,001	06/286,679	8/17/82
4,345,022	06/249,070	8/17/82
4,345,035	06/232,780	8/17/82
4,345,038	06/304,980	8/17/82
4,345,075	06/300,906	8/17/82
4,345,110	06/234,932	8/17/82
4,345,144	06/259,849	8/17/82
4,345,154	06/264,873	8/17/82
4,345,174	06/269,332	8/17/82
4,345,188	06/250,129	8/17/82
4,345,229	06/239,753	8/17/82
4,345,234	06/216,393	8/17/82
4,345,242	06/236,528	8/17/82
4,345,251	06/236,474	8/17/82

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,468,817, Re. S.N. 903,404, Filed Sept. 2, 1986, Cl. 2/181, PERSPIRATION BAND FOR HEADGEAR, Merle W. Nunnery, et al., Owner of Record: *Inventors,* Attorney or Agent: Thomas S. Keaty, Ex. Gp.: 247

4,469,226, Re. S.N. 901,430, Filed Aug. 28, 1986, Cl. 206/470, BLISTER PACK PANEL FOR FACE POWDER COMPACT DISPLAY, Arthur Matney, Owner of Record: *Inventor,* Attorney or Agent: Charles R. Hoffmann, et al., Ex. Gp.: 241

4,473,493, Re. S.N. 889,102, Filed July 23, 1986, Cl. 260/112, HYBRIDOMA ANTIBODY WHICH INHIBITS INTERLEUKIN 2 ACTIVITY, Steve Gillis, Owner of Record: *Immunex Corp., Seattle, Wash.,* Attorney or Agent: Bruce E. O'Connor, et al., Ex. Gp.: 127

4,483,629, Re. S.N. 898,032, Filed Aug. 18, 1986, Cl. 374/57, DYNAMIC TESTING OF ELECTRICAL CONDUCTORS, James A. Schwartz, et al., Owner of Record: *Syracuse University, Syracuse, N.Y.,* Attorney or Agent: Thomas J. Wall, Ex. Gp.: 246

4,529,363, Re. S.N. 905,957, Filed Sept. 11, 1986, Cl. 417/295, SINGLE-STAGE OILLESS SCREW COMPRESSOR SYSTEM, Akira Suzuki, Owner of Record: *Hitachi, Ltd., Tokyo, Japan,* Attorney or Agent: Donald R. Antonelli, et al., Ex. Gp.: 343

4,546,501, Re. S.N. 907,594, Filed Sept. 12, 1986, Cl. 623/23, HIP PROSTHESIS, Ramon B. Gustilo, et al., Owner of Record: *Inventor,* Attorney or Agent: Leonard W. Sherman, et al., Ex. Gp.: 332

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Publications This Issue.

PATENT NOTICES

Certificates of Correction for the Week of Nov. 4, 1986

D. 283,452	4,548,749	4,578,537	4,600,448
D. 284,003	4,549,140	4,578,911	4,600,449
D. 285,495	4,550,638	4,580,558	4,601,313
3,894,525	4,551,689	4,581,077	4,601,529
4,039,304	4,551,758	4,582,102	4,601,828
4,048,427	4,554,014	4,582,536	4,602,331
4,307,218	4,554,468	4,582,678	4,602,480
4,326,990	4,555,051	4,583,515	4,602,715
4,402,481	4,555,320	4,583,539	4,603,112
4,412,996	4,556,310	4,583,886	4,603,404
4,414,305	4,556,658	4,584,950	4,603,695
4,444,461	4,556,700	4,585,401	4,603,699
4,448,824	4,556,894	4,585,408	4,604,268
4,474,859	4,558,351	4,585,448	4,604,357
4,485,413	4,558,357	4,587,021	4,604,399
4,489,603	4,558,440	4,587,077	4,604,618
4,494,185	4,559,623	4,587,976	4,604,626
4,499,978	4,560,680	4,588,272	4,604,688
4,502,300	4,561,682	4,588,385	4,605,161
4,512,826	4,561,750	4,588,741	4,605,231
4,513,588	4,563,504	4,588,948	4,605,594
4,517,825	4,564,778	4,589,157	4,606,038
4,518,819	4,565,680	4,589,595	4,606,089
4,519,575	4,565,714	4,589,606	4,606,123
4,520,829	4,567,055	4,589,932	4,606,300
4,521,297	4,567,166	4,590,432	4,606,529
4,525,442	4,567,231	4,593,018	4,606,982
4,526,585	4,568,182	4,593,514	4,607,155
4,530,185	4,568,275	4,594,199	4,608,266
4,533,142	4,568,924	4,594,270	4,608,721
4,535,043	4,569,010	4,595,447	4,608,972
4,536,108	4,571,501	4,595,525	4,609,306
4,536,988	4,571,835	4,596,483	4,609,408
4,537,074	4,571,924	4,597,275	4,609,579
4,539,393	4,573,197	4,598,034	4,609,586
4,539,841	4,574,043	4,598,076	4,609,672
4,542,151	4,574,182	4,598,327	4,609,752
4,542,160	4,575,557	4,598,934	4,609,865
4,543,611	4,576,173	4,598,993	4,609,878
4,544,555	4,576,583	4,599,121	4,610,939
4,544,898	4,577,685	4,599,616	4,611,207
4,545,328	4,577,806	4,599,847	
4,547,822	4,578,352	4,599,871	
4,548,098	4,578,510	4,600,200	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7609
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Irvine: University of California, Irvine Library	(714) 856-7234
	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 730-7290
Colorado	Denver Public Library	(303) 571-2122
Connecticut	New Haven: Science Park Library	(203) 786-5000
Delaware	Newark: University of Delaware Library	(302) 451-2965
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami–Dade Public Library	(305) 375-2665
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis–Marion County Public Library	(317) 269-1741
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4284
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-7040
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1227
	The Free Library	(215) 686-5330
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2371
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
	Nashville: Vanderbilt University Library	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: Virginia Commonwealth University Library	(804) 257-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF September 30, 1986

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	6-07-85
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	2-24-84
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-01-85
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	5-15-85
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	10-09-84
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	6-01-84
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	3-26-84
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—TRYGVE M. BLIX, Director	6-12-85
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—EDWARD E. KUBASIEWICZ, Director	2-21-84
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	7-25-84
DESIGN, GROUP 290—K. L. CAGE, Director	6-04-84
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	2-19-85
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	4-08-85
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	5-21-84
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	6-03-85
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	3-03-86

Expiration of patents: The patents within the range of numbers indicated below expire during September 1986, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents . . . . . Numbers 3,464,063 to 3,470,563, inclusive

Plant Patents . . . . . Numbers 2,918 to 2,926 inclusive

REEXAMINATIONS

NOVEMBER 4, 1986

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,474,600 (586th)
HERBICIDALLY ACTIVE NOVEL SUBSTITUTED PHENYLSULFONYLUREA DERIVATIVES

Aya Masahiro; Junichi Saito; Kazuomi Yasui, all of Tokyo; Kozo Shiokawa, Kanagawa; Norihisa Morishima, Tokyo, and Toshio Goto, Kanagawa, all of Japan, assignors to Nihon Tokushu Noyaku Seizo K.K., Tokyo, Japan

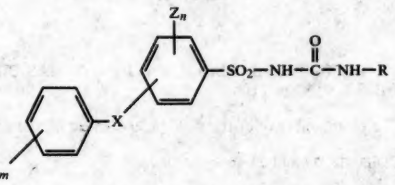
Reexamination Request No. 90/000,953, Feb. 5, 1986.
Reexamination Certificate for Patent No. 4,474,600, issued Oct. 2, 1984, Ser. No. 415,629, Sep. 7, 1982.
Claims priority, application Japan, Sep. 16, 1981, 56-144590
Int. Cl.[4] A01N *43/54, 43/66;* **C07D** *239/42, 251/16*
U.S. Cl. 71—92

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **1** is determined to be patentable as amended.

Claims **2–6**, dependent on an amended claim, is determined to be patentable.

1. A substituted phenylsulfonylurea derivative of the formula

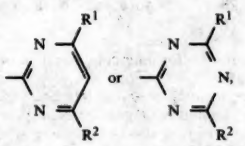


wherein

X is an oxygen atom [or a direct bond,]

Y and Z each independently is a halogen atom, a C_1 to C_6 alkyl group, a C_1 to C_6 alkoxy group or a nitro group,

R is



R^1 and R^2 each independently is a C_1 to C_6 alkyl group or a C_1 to C_6 alkoxy group,

m and n each independently is 0, 1 or 2, and $m+n \neq C$.

B1 3,809,101 (587th)
NAIL FILE

Takaetsu Shimizu, 24-12 4-chome, Kami-Ikedai, Ota-ku, Tokyo, Japan

Reexamination Request No. 90/000,641, Oct. 1, 1984.
Reexamination Certificate for Patent No. 3,809,101, issued May 7, 1974, Ser. No. 321,556, Jan. 8, 1973.
Claims priority, application Japan, Nov. 11, 1972, 47-128877[U]
Int. Cl.[4] A45D *29/04*
U.S. Cl. 132—76.4

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **1** is determined to be patentable as amended.

Claims **2–5**, dependent on an amended claim, are determined to be patentable.

New claims **6–28** are added and determined to be patentable.

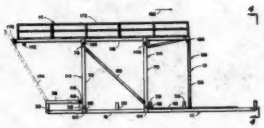
1. In a nail file comprising an abrasive holding member having a handle portion and an abrasive sheet, the improvement comprising an elastic cushioning layer secured between said abrasive holding member and said abrasive sheet, *said abrasive holding member being stiff and comprising a relatively thin holding layer to which said elastic cushioning layer is secured,*

said holding member forming a stiff structure which can be manually held to cause a push-pull force during operation of the nail file, said elastic cushioning layer providing an improved polishing effect due to the restoring force derived from the shearing deformation of the elastic layer caused by the push-pull force provided by combined effect of the still backing layer, the elastic cushioning layer and the abrasive sheet when the abrasive sheet is drawn against the surface of the fingernail of the user.

B1 4,365,692 (588th)
ELEVATING CATWALK

Gary W. Craig, and Jack W. Langston, both of Tulsa, Okla., assignors to Loffland Brothers Company, Tulsa, Okla.

Reexamination Request No. 90/000,539, Apr. 11, 1984.
Reexamination Certificate for Patent No. 4,365,692, issued Dec. 28, 1982, Ser. No. 212,891, Dec. 4, 1980.
Int. Cl.[4] B60S *13/00*
U.S. Cl. 187—8.72



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1** and **2** are determined to be patentable as amended.

Claims **3–6**, dependent on an amended claim, are determined to be patentable.

1. An elevating catwalk apparatus comprising a longitudinal base means supported on a ground surface, a catwalk assembly pivotally secured to the base means and movable between an elevated position and a lowered catwalk position with respect thereto, lifting link assembly means *having internal bracing means* pivotally *and non-slidably* interposed between the base means and catwalk assembly and responsive to a longitudinal force on the catwalk assembly in one direction *along a force line spaced above the base means* for elevating [of] the catwalk assembly and a longitudinal force on the catwalk assembly in an opposite direction for lowering of the catwalk assembly, pivotal and slidable brace means *having one lower end slidably* secured [between] *in* the base means *independently of the*

lifting link assembly means and *the opposite upper end pivotally secured to* at least one lifting link assembly for securing the lifting link assembly in the elevated position of the catwalk assembly, pin means removably engagable with the base means and brace means for securably retaining the catwalk assembly in the elevated position, and wherein the base means comprises a plurality of mutually parallel spaced beam members providing a skid for facilitating moving of the elevating catwalk apparatus from site to site, and including rail means secured to the inboard side of at least one of the beam members for slidably receiving *the* [at least] one *lower* end of the brace means therein during raising and lowering of the catwalk assembly.

B1 4,307,764 (589th)

BULK MATERIAL TRANSPORT BAG

Peter J. Nattrass, Fox River Grove, Ill., assignor to Bulk Lift International Incorporated, Des Plaines, Ill.

Reexamination Request Nos. 90/000,585, Jul. 6, 1984 and 90/000,734, Mar. 8, 1985.

Reexamination Certificate for Patent No. 4,307,764, issued Dec. 29, 1981, Ser. No. 159,833, Jun. 16, 1980.

Int. Cl.⁴ B65D *33/02*

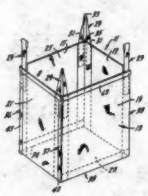
U.S. Cl. 383—17

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–7** is confirmed.

1. In a bag for transporting bulk materials, of the kind comprising at least four generally rectangular side walls joined to and extending upwardly from a bottom wall, all formed of a woven fabric, the bag having an open top and a plurality of lifting loops each including a bight portion and two legs, with the loop legs secured to the bag at its top, the improved construction comprising:

at least four side wall seams joining the side walls of the bag, each seam including two pleats, each pleat formed inwardly of a side edge of one of two adjacent side walls, the pleats being sewn together throughout approximately the height of the bag to form the seam, with a terminal strip of each side wall projecting from each seam, each terminal strip being wider than the leg portion of a lifting loop;



each lifting loop being secured to a corner of the bag by folding the top portion of each of the two terminal strips at that corner over a substantial length of one leg of the lifting loop and anchor stitching each terminal strip to the adjacent portion of its side wall, through the covered leg portion of the lifting loop, with the anchor stitching extending from the top of the bag at least to the bottom of the lifting loop leg in each instance;

the seam pleats being folded against one side wall of the bag, at each top corner where a lifting loop is mounted, and the anchor stitching for the lifting loops also extending through the folded pleats.

B1 4,406,605 (590th)

APPARATUS FOR FORMING CONCRETE PIPE OF UNIFORM DENSITY INCLUDING CONTROL MEANS TO VARY FEED RATE OF CONCRETE/AGGREGATE AS FUNCTION OF PACKERHEAD TORQUE

George E. Hand, Williamstown, N.J., assignor to Kerr Concrete Pipe Company, Folsom, N.J.

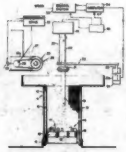
Reexamination Request No. 90/000,579, Jun. 25, 1984.

Reexamination Certificate for Patent No. 4,406,605, issued Sep. 27, 1983, Ser. No. 188,032, Sep. 17, 1980.

Continuation-in-part of Ser. No. 39,316, May 16, 1979, Pat. No. 4,336,013.

Int. Cl.⁴ B28B *3/18, 21/24*

U.S. Cl. 425—145



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–3**, **16**, and **18–20** is confirmed.

Claims **15**, **17** and **24** are cancelled.

Claims **4**, **13**, **14** and **21** are determined to be patentable as amended.

Claims **5–12**, **22** and **23**, dependent on an amended claim, are determined to be patentable.

New claims **25–27** are added and determined to be patentable.

1. An apparatus for forming concrete pipe of uniform density comprising:

(a) means for forming concrete into the form of said pipe comprising a mold having an inner wall, a packing head for packing concrete against said inner wall, a shaft centrally mounted on said packing head, a packing head motor for revolving said packing head through the mold and means for raising said packing head only at a fixed rate and for lowering said packing head in at least one pass;

(b) means for feeding concrete to said forming means;

(c) a feed motor for driving said concrete feeding means;

(d) means for sensing and measuring the components of the actual power being used by said packing head motor said power being a function of torque generated in said packing head;

(e) means for selecting a desired power;

(f) means for comparing said actual power to said desired power; and

(g) means for controlling the speed of said feed motor responsive to said means for comparing.

STATUTORY INVENTION REGISTRATIONS

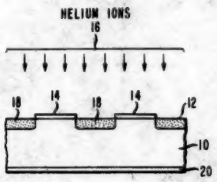
PUBLISHED NOVEMBER 4, 1986

A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C. 157.

H147
HIGH RESISTIVITY GROUP III-V COMPOUNDS BY HELIUM BOMBARDMENT

Leonard C. Feldman, Berkeley Heights; Marlin W. Focht, Stewartsville; Albert T. Macrander, Summit, and Bertram Schwartz, Westfield, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 31, 1983, Ser. No. 499,775
Int. Cl.[4] H01L *27/02, 21/00*
U.S. Cl. 357—47 **19 Claims**



16. A semiconductor device comprising

a Group III-V compound body containing indium and phosphorus,

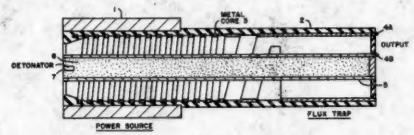
a planar p-n junction in said body, and

a high resistivity, helium-ion bombarded region which extends through said junction.

H148
SHOCK ELECTROMECHANICAL ENERGY CONVERTER WITH PERMANENT MAGNET

James K. Thompson, Columbus, Ohio, assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 5, 1984, Ser. No. 628,096
Int. Cl.[4] H02K *1/00;* **G21B** *1/00*
U.S. Cl. 89—8 **7 Claims**

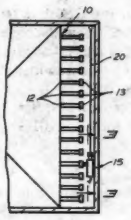


1. A device comprising an electrical coil formed about an axis and having a plurality of turns; said coil having a first end and a second end; first means for causing a magnetic flux to flow through said coil along said axis; second means for causing said magnetic flux to pulse for a short duration of time; and third means for causing the turns of said coil to be shorted out one-by-one during the duration of time said magnetic field is pulsed.

H149
ON-LINE TEMPERATURE SENSOR

William E. Cawley, Richland, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 27, 1984, Ser. No. 635,022
Int. Cl.[4] G21C *17/00*
U.S. Cl. 376—247 **3 Claims**



1. In combination with a nuclear reactor having a plurality of coolant process tubes each having a corresponding end protruding outwardly from a wall of the reactor and provided with a stationary temperature detector:

monitoring means for remotely recording the temperature sensed by each of said temperature detectors;

a movable temperature sensor mounted on the wall of the reactor core;

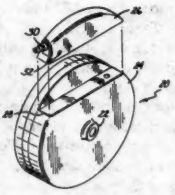
remotely operated means operably connected between the wall of the reactor and said temperature sensor for selectively coupling the movable temperature sensor to one end of a selected process tube, the reliability and accuracy of said movable temperature sensor being greater than the reliability and accuracy of the stationary temperature detectors;

whereby the temperature indicated by use of the stationary temperature detector can be verified without modifying reactor operation or replacement of the stationary temperature detector associated with the selected process tube.

H150
ACCESSORY MODULE FOR IMPLANTABLE FLUID DISPENSING DEVICE

Douglas O. Hankner, Moundsview, and Larry A. Lundeen, Blaine, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Aug. 3, 1984, Ser. No. 637,353
Int. Cl.[4] A61M *5/00*
U.S. Cl. 604—93 **13 Claims**



1. An implantable fluid dispensing device comprising:

a sealed case having a smooth biocompatible curved surface;

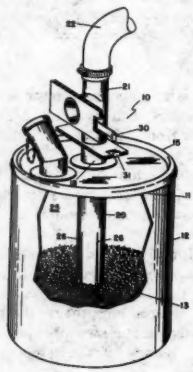
the case having an indentation inwardly diverging from the curved surface; and

an accessory housing shaped to mount on the case in the indentation and shaped to conform generally to the curved surface.

H151
POWDERY CLOUD DISPERSER

William G. Rouse, Aberdeen; Jacob Sofinowski, Baldwin, and Ronald J. Morin, Bel Air, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 3, 1984, Ser. No. 677,623
Int. Cl.[4] A01C *3/06*
U.S. Cl. 239—654 **3 Claims**



1. A disperser of a powdery cloud consisting essentially of:

a barrel having an open-end construction and containing powder,

a cover separably engaged to said open-end having a top and bottom surface with an axial opening passing therethrough,

a first hollow elongated cylinder having a first and second open end,

said first end secured to said bottom of said cover communicating with said axial opening,

said elongated cylinder provided with a plurality of elongated slits extending into said powder,

a second hollow cylinder having a first and second end of open construction, said first end of said second cylinder secured to said top surface of said cover in axial alignment to said opening of said cover,

a hollow elbow having a first and second end of open construction, said first end of said elbow secured to said cover and communicating with said barrel,

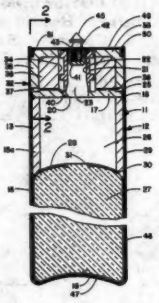
forced air means for conveyance of powder secured to said second end of said second cylinder,

whereby, forced air enters said second end of said second cylinder and flows through said cover into said first elongated cylinder and thence through said slits to said powder carrying said powder up and through said first end and thence through said second end of said elbow out to the atmosphere in the form of a powdery cloud.

H152
RADIOACTIVE WASTE DISPOSAL PACKAGE

Robert F. Lampe, Bethel Park, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 4, 1985, Ser. No. 688,673
Int. Cl.[4] G21C *19/00, 13/00*
U.S. Cl. 376—272 **12 Claims**

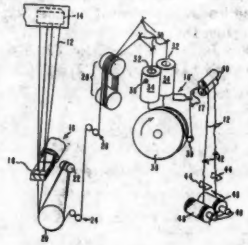


1. A waste package comprising: a canister for containing vitrified radioactive waste material, said canister having a side wall, an end wall terminating in a neck for defining an inlet, a closure member sealing said inlet closed, a sealed outer shell completely encapsulating said canister in radially spaced relation to said canister side wall and defining a space therebetween, means adjacent said neck for supporting a metallic filler in solid form, said metallic filler convertible into a liquid state for flow into said space after said outer shell has been sealed and then subsequent hardened to form a solid layer completely occupying said annular space.

H153
METHOD FOR APPLYING LIQUID TO YARN

Donald M. Sadler, Parkside, and Harold F. Staunton, Avondale, both of Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 631,747, Jul. 17, 1984. This application May 8, 1985, Ser. No. 731,764
Int. Cl.[4] B05D *3/12, 1/02, 7/00, 5/00*
U.S. Cl. 427—57 **6 Claims**



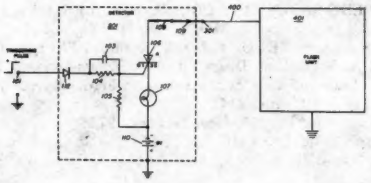
1. A method for intermittently applying a liquid to a moving threadline comprising: supplying a liquid in a metered stream to a continuously vibrating atomizing surface of an active horn of an ultrasonic vibrator, said liquid having a threshold level of vibration amplitude for atomizing said liquid; moving the threadline in a path in close proximity to said atomizing surface; and intermittently atomizing and propelling the liquid onto the yarn by using bilevel excitation of the horn to vary the amplitude of vibration of said continuously vibrating atomizing

surface above and below said threshold level thereby adding liquid to said threadline intermittently to produce liquid treated and untreated regions along the threadline.

H154
FLASH PREFIRE DETECTOR

Gary L. Boyce, Forest Hills, and Grat E. Blackburn, Street, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 573,096, Jan. 23, 1985. This application Jul. 16, 1985, Ser. No. 756,010
Int. Cl.[4] H05G *1/64, 1/22*
U.S. Cl. 378—98 **2 Claims**



1. In an X-ray system having plural flash units for photographing a subject, the flash units operated by a trigger signal, a flash unit trigger indication system including a plurality of detector circuits each one respectively in series with a triggering input to each said X-ray flash unit, each of said detector circuits comprising:

an SCR semiconductor switching device comprising a terminal leading to the cathode gate side of the SCR, at which terminal is fed a triggering pulse intended for triggering a respective flash unit, the anode side of the SCR being connected to the flash unit for passing a triggering signal thereto, for initiating its operation for flashing, each of said flash units being grounded;

a positive grounded voltage source;

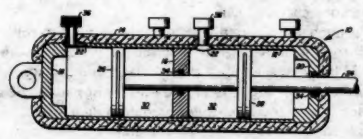
a lamp unit connected between the cathode terminal of the SCR and the negative side of said voltage source, creating an indication in the cathode circuit path that said SCR has been turned on and operated, and hence that the voltage source has been fed to trigger a respective flash unit through a turned on SCR, a lighting of a respective lamp unit indicating a triggering of a respective flash unit;

a switch connected in series between each respective flash unit and the anode terminal of the SCR in its respective detector circuit, said switch being opened for turning off a respective lamp indication in addition to turning off the SCR until its next operation.

H155
FLUID CONNECTION

James J. Childress, Inyokern, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 5, 1985, Ser. No. 762,645
Int. Cl.[4] F16L *5/00*
U.S. Cl. 285—189 **8 Claims**



1. A method for providing a fluid connection in a molded or cast container having a relatively thin metallic inner liner including at least one raised boss, said container reinforced by at least one outer layer of resin-impregnated filament, the improvement comprising the steps of:

drilling through said layer, liner, and said raised boss to form a channel therethrough to form a beveled boss surface diverging radially outwardly;

inserting a resilient sealing ring within said channel;

seating said sealing ring on said beveled boss surface;

inserting a hollow, generally tubular connection including a threaded exterior portion and a beveled interior end section into said channel;

angularly disposing said tubular insert beveled interior end section in planar abutting engagement with said boss beveled surface such that said resilient sealing ring is disposed thereinbetween; and

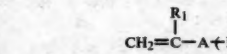
sealing said connection in place within said channel.

H156
SILVER HALIDE COLOR LIGHT-SENSITIVE MATERIAL

Takashi Ozawa, and Tsumoru Hirano, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation-in-part of Ser. No. 632,736, Jul. 20, 1984, abandoned. This application Oct. 3, 1985, Ser. No. 783,505
Claims priority, application Japan, Jul. 20, 1983, 58-132135
Int. Cl.[4] G03C *7/32*
U.S. Cl. 430—548 **19 Claims**

1. A silver halide color light-sensitive material containing a polymer coupler having an average molecular weight higher than 30,000 and having a polymeric unit derived from a monomeric magenta coupler represented by formula (I):



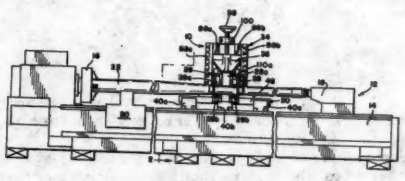
(I)

wherein R_1 is hydrogen, chlorine, or a lower alkyl group having 1 to 4 carbon atoms; A is a phenylene group, a —CONH— group or a —COO— group; B is an unsubstituted or substituted alkylene group, an unsubstituted or substituted aralkylene group, or an unsubstituted or substituted phenylene group; Y is —O—, —NH—, —S—, —SO—, —SO_2—, —CONH—, —COO—, —NHCO—, or —NHCONH—; Q is a residue of a magenta color-forming coupler which forms a dye through coupling with the oxidation product of an aromatic primary amine developer; and m is 1 when n is 1, and m is 0 or 1 when n is 0.

H157
WORK REST SUPPORT ASSEMBLY

Thomas V. Smith, Troy, N.Y., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 25, 1985, Ser. No. 791,265
Int. Cl.[4] B23B *25/00*
U.S. Cl. 82—39 **11 Claims**



1. A stand-alone work rest support assembly for enabling positioning of a work rest relative to a workpiece support axis of a machine tool or the like, said support assembly comprising, in combination:

a base member defining a first reference surface adapted to

engage a floor support surface or the like, and defining a second reference surface substantially parallel to said first base reference surface;

a slide base defining a third reference surface adapted for sliding relation with said second reference surface, said slide base defining a fourth reference surface and including means establishing a first rectilinear guide path on said fourth reference surface;

guide means mutually cooperable with said base member and said slide base so as to facilitate predetermined sliding movement of said slide base relative to said base member;

a horizontal slide block supported by said slide base and defining a fifth reference surface adapted for sliding relation with said fourth reference surface along said first guide path, said horizontal slide block defining a sixth reference surface lying in a plane substantially perpendicular to said fifth reference surface and including means establishing a second rectilinear guide path on said sixth reference surface;

first adjustment means operatively associated with said slide base and said horizontal slide block in a manner to enable selective movement of said horizontal slide block along said first guide path relative to said slide base;

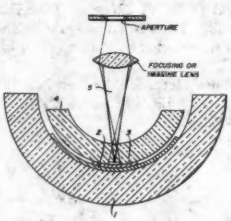
a vertical slide block defining a seventh reference surface adapted for sliding relation with said sixth reference surface in guided relation along said second guide path; and

second adjustment means operatively associated with said horizontal and vertical slide blocks and selectively operable to effect movement of said vertical slide block relative to said horizontal slide block along said second guide path, said vertical slide block being adapted to support at least one pass-through work rest such that selective positioning of said base member, slide base, and horizontal and vertical slide blocks relative to each other is operative to selectively position said work rest in three mutually perpendicular planes.

H158
METHOD OF BONDING AN ELECTRICALLY CONDUCTIVE MATERIAL TO AN ELECTRICALLY CONDUCTIVE LAYER WHICH OVERLIES A CURVED NON-METALLIC SUBSTRATE

Philip R. Frausto; Charles E. Wickersham, both of Columbus, Ohio, and Thomas R. Tucker, Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 12, 1985, Ser. No. 797,063
Int. Cl.[4] B23K *9/00*
U.S. Cl. 219—121 LD **10 Claims**



10. A method of bonding an electrically conductive material to an electrically conductive layer adhered to and overlying a curved nonmetallic substrate comprising:

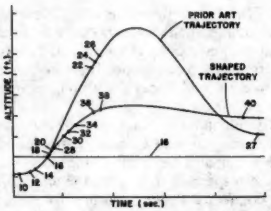
providing a non-metallic, substantially inert to high density laser beam energy and substantially transparent to high density laser beam energy, substrate with a curved surface having adhered thereto in conformity to said curved surface an electrically conductive layer,

placing an electrically conductive material to be bonded to said electrically conductive layer on said layer, then placing in contact with said electrically conductive material sufficient to hold said material against said layer, a rigid, substantially inert to high density laser beam energy, cover means to hold said material against said layer, then directing a high energy density laser beam through said substrate and on said layer at sufficiently high energy density welding said layer to said material.

H159
SHAPED TRAJECTORY CRUISE MISSILE LAUNCH MODE

Leo R. Kaszas, San Diego; Robert J. Kendrew, El Cajon, and David K. Shutts, San Diego, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 17, 1984, Ser. No. 797,090
Int. Cl.[4] F41G *7/00;* **F42B** *15/02*
U.S. Cl. 244—3.21 **1 Claim**



1. A method of optimizing the launch mode of a cruise missile having an autopilot to achieve higher missile velocity at booster burnout and higher altitude at the beginning of stabilized cruise flight, the improvement comprising the steps of:

(a) launching said cruise missile from a launch platform, said cruise missile having a booster motor, a deployable inlet and deployable wings;

(b) activating a thrust vector control system of said booster motor to impart a relatively high flight path angle to said missile;

(c) jettisoning protective covers about said missile at a predetermined height above said launch platform;

(d) deploying aerodynamic control fins carried by said missile such that said fins control roll motion and said thrust vector control system controls pitch and yaw motion of said missile;

(e) commanding an immediate pushover of said missile to a much smaller predetermined flight path angle by said autopilot;

(f) deploying the inlet of said missile;

(g) deploying the wings of said missile during the burning of said booster motor to achieve a blend of aerodynamic lift and control of said missile with booster lift and thrust vector control of said missile;

(h) commanding said missile by said autopilot to achieve the maximum allowable lift coefficient of said missile with said blend of said booster motor and said aerodynamic lift while continuing to decrease said flight path angle of said missile to a small positive, predetermined value;

(i) jettisoning said booster motor upon booster burnout;

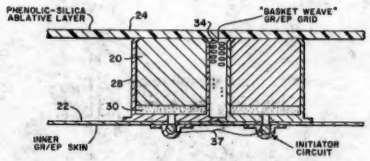
(j) starting a cruise engine carried aboard said missile; and

(k) commanding said missile by said autopilot to pull out in stabilized cruise flight at an altitude calculated for an optimum missile velocity and flight path angle.

H160
INTEGRAL STRUCTURAL WARHEAD SHELL

John S. Perry, Seattle, Wash., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 23, 1985, Ser. No. 812,602
Int. Cl.[4] F42B *13/18*
U.S. Cl. 102—494 **6 Claims**



1. In a missile having a warhead section enclosing a plurality of pellets disposed for impact with an incoming target, said warhead section comprising:

a. a structural shell;

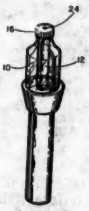
b. a plurality of pellet assemblies disposed around the periphery of said shell, said pellet assemblies including pellets disposed for expulsion from said missile shell for impact with an incoming target, said pellet assemblies and said missile shell forming an integral structural assembly; and;

c. explosive means for expelling said pellets from said missile shell.

H161
SMALL FUEL-AIR EXPLOSIVE BOTTLE

John D. Sullivan, Jr., Edgewood, Md., assignor to The United States of America as represenetd by the Secretary of the Army, Washington, D.C.

Filed Feb. 3, 1986, Ser. No. 825,422
Int. Cl.[4] F42B *25/12*
U.S. Cl. 102—363 **6 Claims**



1. An apparatus for dispersing combustible fluids comprising:

(a) a bottle filled with combustible fluid having a threaded opening at the top;

(b) a first closed ended hollow tube inserted through said threaded opening of the bottle;

(c) a second closed ended hollow tube of the same diameter as said first hollow tube containing an explosive fluid to disperse the combustible fluid in said bottle;

(d) detonator inserted into the top of said hollow tube for igniting the said explosive fluid;

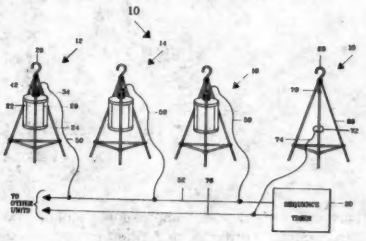
(e) means for igniting said explosive fluid contained in said second hollow tube to disperse said combustible fuel; and

(f) means for igniting said dispersed combustible air-fuel.

H162
SYSTEM AND METHOD FOR WIDE-AREA MINE CLEARANCE

John D. Sullivan, Jr., Edgewood, and Charles N. Kingery, Aberdeen, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 3, 1986, Ser. No. 825,423
Int. Cl.[4] F42B *3/00*
U.S. Cl. 102—403 **14 Claims**



1. A system for wide-area mine clearance comprising:

at least first and second fuel-air explosive units;

each of said at least first and second fuel-air explosive units including a stand, a container effective for containing a fuel, means for suspending said container a first predetermined height above a surface, and means for bursting said container and dispersing said fuel to form at least first and second clouds of fuel droplets in air, respectively;

each of said first and second clouds having a horizontal radius;

said at least first and second fuel-air explosive units being positioned a first horizontal distance apart less than twice said horizontal radius, whereby an explosion initiated in said first cloud from said first fuel-air explosive unit propagates to said second cloud from said second fuel-air explosive unit;

at least one detonator unit;

said at least one detonator unit containing a quantity of high explosive of a type effective for initiating a fuel-air explosion in one of said clouds;

said at least one detonator unit including means for disposing said quantity of high explosive at a second horizontal distance of less than said horizontal radius from a center of said first cloud and at a second predetermined height above said surface;

said second predetermined height being substantially equal to said first predetermined height;

means for explosively bursting said containers in said at least first and second fuel-air explosive units simultaneously, whereby said first and second clouds are formed; and

means for detonating said quantity of high explosive a predetermined time after explosively bursting said containers, whereby a fuel-air explosion is produced in said first and second clouds.

H163
SINGLE CHAMBER RECHARGER

William J. Spraker, Ridgecrest, and Willard F. Simpson, Inyokern, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 10, 1986, Ser. No. 835,856
Int. Cl.[4] F04B *49/00*
U.S. Cl. 417—46 **23 Claims**

1. A portable fluid compressor, comprising:

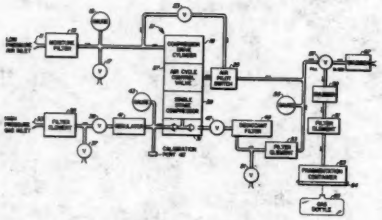
means for providing a low pressure fluid source;

means for providing a high pressure fluid source;

means, coupled between said low pressure fluid source and

said high pressure fluid source, for enabling said low pressure fluid to compress said high pressure fluid to a boosted high pressure fluid;

means, coupled between said low pressure fluid source and said boosted high pressure fluid source, for shutting down said enabling means when a predetermined boosted high pressure fluid is achieved;



means, coupled to said compression enabling means, for desiccanting, purifying, and filtering said boosted high pressure fluid; and

fragmentation containment means, coupled to said desiccanting means for holding a vessel to be filled with said boosted high pressure fluid.

H164
HIGH CAPACITY MAGAZINE FOR WEAPONS

Giulio Savioli, Andover, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 7, 1986, Ser. No. 838,540
Int. Cl.[4] F41C *25/10*
U.S. Cl. 89—33.02 **15 Claims**

1. A high capacity magazine for a weapon having a barrel extending in a firing direction, comprising:

a cartridge storage drum for storing a plurality of cartridges with a longitudinal axis of the cartridge lying substantially in a perpendicular position with respect to the firing direction when the magazine is connected to the weapon;

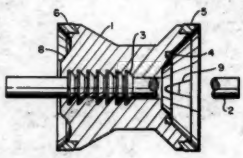
guide means connected to said drum for guiding cartridges from said drum along a curved guide path to rotate the cartridges from their substantially perpendicular position toward a parallel position with respect to the firing direction; and

drive means for driving cartridges from said drum to said guide means and along said guide path.

H165
MEANS TO CONTROL SABOT PETAL TRAJECTORY AT START OF DISCARD

Graham F. Silsby, Harford County, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 24, 1986, Ser. No. 841,387
Int. Cl.[4] F42B *13/16*
U.S. Cl. 102—520 **10 Claims**



1. An apparatus for controlling the initial trajectory of the petals of a discarding sabot from a gun-launched, sabot-driven projectile, comprising:

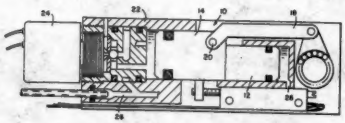
(a) means for attaching each sabot petal to its adjacent sabot petals, which means are configured and made of appropriate material so as to act as a hinge which allows the sabot petals to rotate open out of contact with the projectile, to the point of contacting each other only at their ends, while said sabot petals remain attached to each other by said means, and so that at that point said means rupture so as to allow the sabot petals to release from the projectile, and

(b) sabot petals which are contoured or relieved at the ends so as to allow them to rotate open about an axis through adjacent hinge points to the point of the relief contour's flanks contacting each other only at their ends, while the sabot petals remain attached to each other by said means.

H166
DUAL AREA TANGENT PISTON

Joe L. Byrd, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 19, 1986, Ser. No. 865,492
Int. Cl.[4] F01B *9/00*
U.S. Cl. 92—138 **7 Claims**



1. A dual area tangent piston comprising two integrally connected pistons of different size cross-sectional areas, said pistons being non-concentric and aligned along a common line at one side of the pistons at a tangent point of each piston and on said common line.

REISSUES

NOVEMBER 4, 1986

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,273

APPARATUS FOR SELECTIVELY VARYING THE LONGITUDINAL POSITION OF A SKIER ON A PAIR OF SKIS

William H. Guild, Eagle Mountain Rd., Jackson, N.H. 03846

Original No. 4,358,904, dated Nov. 16, 1982, Ser. No. 163,178, Jun. 26, 1980. Application for reissue Mar. 21, 1984, Ser. No. 591,866

Int. Cl. A43B *5/04*

U.S. Cl. 36—117 **11 Claims**

1. A boot having a front *toe* end portion and a back *heel* end portion formed on a longitudinal axis, the boot particularly adapted for mounting to snow skis comprising an upper portion of the boot configured to receive a foot and a two part sole member, the first part *includes both the toe end portion and the heel end portion being* movable relative to the second part, the first part formed integrally with the upper portion of the boot and depending therefrom, the second part being attachable to the ski and means to restrict movement of the first part relative to the second part along the longitudinal axis.

Re. 32,274

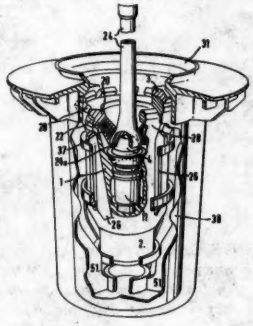
MARINE TETHER ANCHORING DEVICE

Clive J. Burchett, Woodlands, England, assignor to Vickers Public Limited Company, London, England

Original No. 4,459,933, dated Jul. 17, 1984, Ser. No. 315,603, Oct. 30, 1981. Application for reissue Nov. 28, 1984, Ser. No. 675,598

Int. Cl.[4] B63B *21/26;* **F16B** *1/04;* **F16D** *3/00*

U.S. Cl. 114—297 **19 Claims**



11. A marine tether anchoring device comprising

an anchoring chamber for installation in the seabed having a mouth that provides a locking surface;

a tether line having an enlarged lower end that is insertable through said mouth into said anchoring chamber;

a collet that surrounds the lower end of the tether line and has upwardly facing segments that in a retracted state pass said mouth of said anchoring chamber, the uppermost ends of said segments defining tips which in an expanded state of said segments latch behind said mouth of said anchoring chamber; and

wedging means relative to which the collet moves axially to expand said segments, said wedging means providing a load path between said enlarged lower end of said tether line and said collet so that in the latched position the expanded lower end of the tether line is located below said tips of the collet segments and tension in the tether line is transmitted from said expanded portion as a compressive load through said wedging means and said tips of said collet segments to said mouth of said anchoring chamber.

Re. 32,275

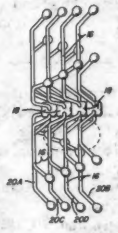
INTRAVAGINAL ANCHORING DEVICE

David L. Zartman, Worthington, Ohio, assignor to New Mexico State University Foundation, Las Cruces, N. Mex.

Original No. 4,377,157, dated Mar. 22, 1983, Ser. No. 194,583, Oct. 6, 1980. Application for reissue Mar. 21, 1985, Ser. No. 714,622

Int. Cl.[4] A61B *19/00*

U.S. Cl. 128—1 R **9 Claims**



1. In a device for intravaginal implantation in mammalian females which includes an axially-extending hub having an anterior end and a posterior end and being encircled by a ring having a plurality of radially-extending springable spine-like fingers thereon, said ring cooperating with said hub to define a multi-pointed star, an improvement consisting of an anterior star having a ring located substantially flush with said hub anterior end and a posterior star having a ring located substantially flush with said hub posterior end, said posterior star being in axially-spaced relation to said anterior star to leave a section of said hub exposed between said stars, the fingers of both stars being shaped to spring forwardly into folded relation in response to a radially-directed pressure exerted upon the ends thereof remote from the hub, and the length of the fingers on the posterior star in relation to said exposed hub section being such that when the posterior star fingers are sprung forwardly into folded relation along the exposed hub section said fingers overlie the exposed length of said hub and are effective to prevent engagement between the exposed hub section and the vaginal musculature.

Re. 32,276

COMBINATORIAL WEIGHING SYSTEM WITH DISCHARGE CONTROL

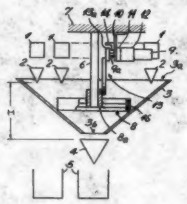
Yukio Kakita, and Yoshiharu Mikami, both of Shiga, Japan, assignors to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Original No. 4,398,614, dated Aug. 16, 1983, Ser. No. 331,789, Dec. 17, 1981. Application for reissue Jun. 25, 1985, Ser. No. 748,488

Claims priority, application Japan, Jan. 12, 1981, 56-3354

Int. Cl. G01G *19/22, 21/28, 13/16, 13/24*

U.S. Cl. 177—25 **11 Claims**



1. A combinatorial weighing system comprising a plurality of weighing hoppers, a plurality of weighing machines respectively associated with said weighing hoppers for weighing articles received in the latter, an arithmetic section for performing combinatorial operation on the basis of weighed data from said weighing machines, searching for a combination whose addition value is equal or closest to a set value and sending discharge signals to the weighing hoppers corresponding to the searched-for combination, a collecting chute for collecting articles discharged from said weighing hoppers and dropping them into a timing hopper situated thereunder, a shutter located, within the collecting chute, above the discharge port of said collecting chute, and a drive unit for opening and closing said shutter in response to a signal from said timing hopper.

Re. 32,277

HOLLOW FIBERS OF CUPRAMMONIUM CELLULOSE AND A PROCESS OF THE MANUFACTURE OF SAME

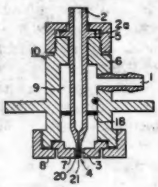
Masami Tsuge, Oita; Shinichi Uematsu, Nobeoka; Yotsuo Ono, Nobeoka; Shokichi Eiga, Nobeoka, and Minoru Makita, Nobeoka, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Original No. 3,888,771, dated Jun. 10, 1975, Ser. No. 365,500, May 31, 1973. Continuation of Ser. No. 141,654, Apr. 18, 1980, abandoned. Application for reissue Jan. 31, 1985, Ser. No. 696,877

Claims priority, application Japan, Jun. 2, 1972, 47-54291; May 9, 1973, 48-51410

Int. Cl.[4] B01D *13/00*

U.S. Cl. 210—500.29 **12 Claims**



1. A dialyzing hollow fiber of cuprammonium regenerated cellulose [having a smooth, skinless inner and outer wall surface and said wall having distributed throughout its thickness a netlike structure of passage routes, the routes having a diameter of not greater than 200, and said fiber having been prepared by the steps of extruding] *that in artificial kidney use causes substantially no clotting of blood and achieves an improved ultrafiltration rate obtained by* a spinning *process using a duplicate orifice, said process comprising extruding* a spinning liquor of [cuprommonium] *cuprammonium* regenerated cellulose [to form a hollow core extrudate] *through an outer ring-shaped orifice* and simultaneously [therewith passing] *extruding* a non-coagulating organic solvent through [the hollow core; passing the resulting extrudate through a gaseous atmosphere whereby the weight of said extrudate causes] *an inner concentric core orifice,* stretching [to substantially reduce the outer diameter thereof;] *the resultant extrudate,* coagulating the [hollow core] extrudate [by contacting said extrudate with] *in* a solution containing aqueous sodium hydroxide [to form a hollow core fiber having a smooth, skinless inner and outer wall;], *regenerating the coagulated extrudate with an acid,* and rinsing and drying the resulting *hollow* fiber, *said hollow fiber having the following characteristics:*

(1) a smooth skinless inner and outer wall surface,

(2) said wall having distributed throughout its thickness a network structure of passage routes,

(3) the said routes having a diameter of not greater than 200 Å,

(4) the outer diameter of the fiber being not greater than 1000μ,

(5) the wall thickness being not greater than 450μ; and

(6) the wall having substantially no pin holes.

Re. 32,278

MUTING CIRCUIT

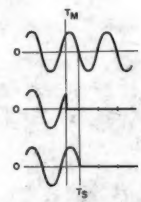
Teppei Yokota, Funabashi, and Yoshiro Joichi, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Original No. 4,420,694, dated Dec. 13, 1983, Ser. No. 285,839, Jul. 22, 1981. Application for reissue Jun. 28, 1985, Ser. No. 749,676

Claims priority, application Japan, Jul. 28, 1980, 55-103321

Int. Cl.[4] H01H *7/00*

U.S. Cl. 307—130 **4 Claims**



3. A digital muting circuit comprising, an input terminal receiving a PCM signal having words of plural bits, an output terminal deriving said PCM signal, a controlling circuit generating a muting-off signal, a detecting circuit examining the bit pattern of said PCM signal to produce a detected signal when the signal level of the waveform corresponding to said PCM signal is less than a predetermined value, and switching means connected between said input terminal and said output terminal and replacing a PCM output signal having a bit pattern representing the zero level with said PCM signal by receiving said detected signal when said muting-off signal is generated.

Re. 32,279

INTERCHANGEABLE TRIPPING DEVICE FOR A CIRCUIT-BREAKER

Michel Bruchet, St-Quentin, France, assignor to UNELEC S.A., Paris, France

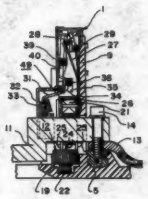
Original No. 4,130,814, dated Dec. 19, 1978, Ser. No. 787,267, Apr. 13, 1977. Application for reissue Jun. 15, 1979, Ser. No. 49,488

Claims priority, application France, Apr. 21, 1976, 76 11688

Int. Cl.[4] H01H *71/74*

U.S. Cl. 335—42 **9 Claims**

1. An interchangeable *three phase* tripping device for a *three pole molded case* circuit-breaker, wherein the circuit-breaker comprises a casing, a current-passing conductor *for each of the phases of the three pole circuit breaker,* and a control mechanism operable by the tripping device to break the circuit of the current-passing [conductor] *conductors of the three phases in unison*; said tripping device including *insulating case, common tripping mechanism, and* excess current detection means *for each phase* constituted as a magnetic circuit which, in operation, surrounds the *respective* current-passing conductor, the magnetic circuit being made of two separable parts, one of which is installed in said casing *of the molded case circuit-breaker* and the other separable part being [removable and integral with said interchangeable tripping device] *fixed in said insulating case of the tripping device* such that replacement of the interchangeable tripping device in the circuit-breaker can be made without disconnection of the current-passing [conductor] *conductors* of the circuit-breaker, *said other separable part of said excess current detection means for each phase acting on said tripping mechanism which is common for the three poles whereby there is excess current in one phase all three poles of the circuit-breaker are opened.*



PLANT PATENTS

GRANTED NOVEMBER 4, 1986

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,795

GAZANIA PLANT CALLED MITSUWA SUPER CLUMP

Toshiaki Ono, Chatsworth, Calif., assignor to Mitsuwa Nursery, Inc., Moorpark, Calif.

Filed Jun. 19, 1985, Ser. No. 746,524
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct cultivar of Gazania named Mitsuwa Super Clump, as described and illustrated, and particularly characterized by its vigor and resistance to disease and fungi; and by its flowers on tall spikes and overall tall growth habit.

5,796

GAZANIA PLANT CALLED MITSUWA ORANGE

Toshiaki Ono, Chatsworth, Calif., assignor to Mitsuwa Nursery, Inc., Moorpark, Calif.

Filed Jun. 19, 1985, Ser. No. 746,525
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct cultivar of Gazania named Mitsuwa Orange, as described and illustrated, and particularly characterized by its bright orange flowers and its dark green foilage having a full trailing habit.

5,797

GAZANIA PLANT CALLED MITSUWA WHITE

Stephen H. Beimel, Agoura, Calif., assignor to Mitsuwa Nursery, Inc., Moorpark, Calif.

Filed Sep. 18, 1985, Ser. No. 777,281
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct cultivar of Gazania named Mitsuwa White, as described and illustrated, and particularly characterized by its pure white flowers having a yellow center and its dark green foliage having a full trailing habit.

5,798

LOTUS PLANT CV MAGGIE BELLE SLOCUM

Perry D. Slocum, 191 Leatherman Gap Rd., Franklin, N.C. 28734

Filed Oct. 9, 1985, Ser. No. 785,839
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct variety of lotus plant substantially as herein shown and described.

PATENTS

GRANTED NOV. 4, 1986

ERRATA

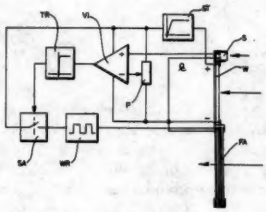
For CLASS	See PATENT NO.
623–010	4,620,327
180–307	4,620,575
239–116	4,620,736
384–044	4,620,751
435–043	4,620,817
435–185	4,620,819
055–385	4,620,869
530–419	4,620,948
540–525	4,620,949
423–027	4,620,964
370–024	4,621,170
381–113	4,621,171
370–032	4,621,172
370–032	4,621,173
313–318	4,621,220
379–098	4,621,356

PATENTS

GRANTED NOVEMBER 4, 1986

GENERAL AND MECHANICAL

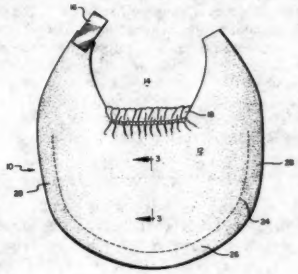
4,620,322
ELECTRO-OPTIC WELDING LENS ASSEMBLY
André M. Eggenschwiler, Obere Bühlstrasse 15, CH-8700 Küsnacht, and Rolf Bruhin, Wetzikon, both of Switzerland, assignors to André M. Eggenschwiler, Küsnacht, Switzerland
Filed Dec. 16, 1982, Ser. No. 450,382
Claims priority, application Switzerland, Apr. 17, 1982, 2264/82
Int. Cl.[4] A61F *9/06*
U.S. Cl. 2—8 **4 Claims**



1. An electro-optic welding legs assembly for use in a welder's helmet or protective eyeshield, said assembly comprising:
light shutter means having a variable light transmission characteristic responsive to an electrical control signal having a variable amplitude;
first polarizer means mounted in front of said light shutter means;
second polarizer means mounted behind said light shutter means, both said first and second polarizer means being polarized in the same direction; and
control means for generating said electrical control signal, said control means being connected to said light shutter means and including opto-electric transducer means for simultaneously (i) generating a signal responsive to the ambient light conditions and (ii) providing operating power to said control means, the amplitude of said electrical control signal from said control means varying said light transmission characteristic of said light shutter means in response to the signal generated by said opto-electric transducer means thereby controlling the rate of light transmission through the combination of said first polarizer means, said light shutter means, and said second polarizer means.

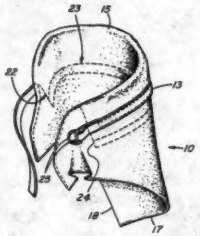
4,620,323
DISPOSABLE BABY BIB
Marla Tepper, 1304 Linden, Highland Park, Ill. 60035
Filed Oct. 18, 1985, Ser. No. 788,766
Int. Cl.[4] A41B *13/10*
U.S. Cl. 2—49 R **14 Claims**

1. A disposable bib comprising:
a body having an opening at one end to encircle at least part of the neck of the wearer;
a perforated inner border substantially along the sides and end of said body opposite said opening and extending approximately to the bottom of said opening to retain drips and spills; and



means for securing said opening around the neck of the wearer.

4,620,324
NECKWRAP
Robert G. Parr, 192 Jarvis Street, Penthouse Number 3, Toronto, Ontario, Canada M5B 2J9
Filed Sep. 10, 1984, Ser. No. 649,140
Claims priority, application Canada, Feb. 29, 1984, 448504
Int. Cl.[4] A41D *23/00*
U.S. Cl. 2—91 **3 Claims**



1. An adjustable athletic exercise neckwrap device for facilitating athletic conditioning of a wearer, said neckwrap device comprising:
a support member of unitary resilient construction and having a generally fixed cylindrical configuration when unflexed, the support member being adapted to generally conform to the neck of a wearer of the device for exerting a generally uniformly distributed force thereon, the support member, when unflexed, assuming the set shape of an open ring of the generally fixed cylindrical configuration and being adapted to flex under bias for placement of the support member around the neck of the wearer, the support member being adapted to be oriented in use such that the opening in the support member faces forward on the wearer and an upper surface of the support member sloping downwardly under the chin of a wearer generally from a location beginning at the back of the jaw of a wearer on each side of the support member;
a skin-compatible, insulating garment material having first and second portions, the first portion extending parallel to the support member between a wearer's neck and the support member and being adapted to be maintained against the neck of the wearer by the support member, the

second portion being connected to the first portion and being adapted to extend downwardly onto the shoulders of the wearer, said first portion and said second portion defining a pocket in which the support member is carried and the interior dimensions of said pocket being greater than the exterior dimensions of said support member to permit a degree of movement of the support member within said pocket during an exercise routine; and

an adjustable tensioning belt secured to the exterior surface of the neckwrap device so as to extend generally parallel to and outside of the support member, said adjustable tensioning belt being adjustably tightenable for causing the support member to contract or expand to thereby vary the magnitude of the generally uniformly distributed force on the neck of the wearer and engagement of the insulation about the neck surfaces of a wearer during an exercise routine.

4,620,325

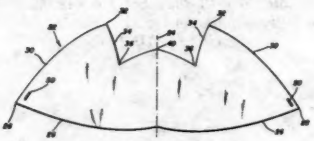
VISORED CAP AND METHOD FOR MAKING SAME

Carl T. Hatfield, P.O. Box 327, Pikeville, Tenn. 37367

Filed Aug. 6, 1984, Ser. No. 637,867

Int. Cl.[4] A42B *1/04*

U.S. Cl. 2—192 **18 Claims**



5. A method of forming the head receiving crown of a visor type sport cap or the like from a single sheet of material, said method comprising: cutting a blank of said material symmetrical about a center line, said blank at each side of said center line being cut along a first arcuately shaped edge extending from the center line to a point remote from said center line, from said point along a second arcuately shaped edge away from said first edge toward said center line to define a crest point, said crest point being that portion of the blank most remote from said first edge, said blank being cut from said crest point to a valley along a third arcuately shaped edge toward said first edge and said center line, and from said valley point along a fourth arcuately shaped edge away from said first edge to a terminal point on said center line; joining the second arcuately shaped edge of half of said blank to the other second arcuately shaped edge to form a first seam; joining the terminal point to the crest points; and joining the third to the fourth arcuately shaped edges of each half of each blank to form a second seam substantially normal to said first seam.

4,620,326

ADJUSTMENT MEANS AND GARMENT

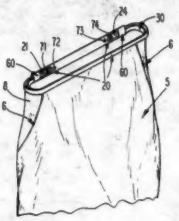
Dan W. Matthias, Jr., Philadelphia, Pa., assignor to Mothers Work, Inc., Philadelphia, Pa.

Filed Jun. 21, 1985, Ser. No. 747,644

Int. Cl.[4] A41F *9/02*

U.S. Cl. 2—221 **8 Claims**

1. Fastening means forming an adjustable circumferential band for use in conjunction with a garment, said garment consisting of a first portion of material and a second portion of material which partially overlaps said first portion of material, said first and second portions of material being affixed to form a pocket in said garment, said fastening means comprising: first band means; second band means; and attachment means for securing said first band means with said second band means, wherein said second portion of material is affixed to said first band means, said first portion of material is affixed to said



second band means, said second band means in operative engagement with said first band means, whereby said garment, including said pocket, is maintained in smart, fitted, unwrinkled relation, irrespective of the location at which said first and second band means are secured by said attachment means.

4,620,327

PROCESS OF ADAPTING SOLUBLE BONE PROTEIN FOR USE IN STIMULATING OSTEOINDUCTION

Arnold I. Caplan, 1300 Oakridge Dr., Cleveland Heights, Ohio 44121, and Glenn T. Syftestad, 3660 Warrensville Center Rd. #101, Shaker Heights, Ohio 44122

Filed Jul. 5, 1984, Ser. No. 628,168

Int. Cl.[4] A01N *63/02*; A61K *35/32*

U.S. Cl. 632—10 **12 Claims**

1. A method of adapting soluble bone protein for use in osteoinduction comprising combining soluble bone protein purified to a state effective to initiate chondrogenesis with a biocompatible, biodegradable mass capable of releasing the protein in a time dependent manner for retarding diffusion of said protein from a site of in vivo implantation.

4,620,328

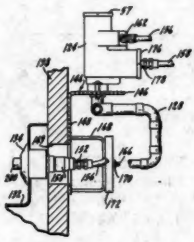
LAVATORY SYSTEM FOR USE IN POTENTIALLY VANDALIZED AREAS

Frederic Lissau, Chicago, Ill., assignor to Sloan Valve Company, Franklin Park, Ill.

Continuation of Ser. No. 505,101, Jun. 16, 1983, abandoned. This application Jul. 1, 1985, Ser. No. 750,238

Int. Cl.[4] E03C *1/04*

U.S. Cl. 4—192 **3 Claims**



1. A wall-mounted lavatory system for use in potentially vandalized areas, such as prisons, comprising:

(a) a lavatory sink having an outer surface covering a single aperture in the wall;

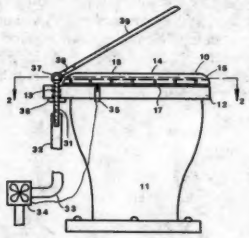
(b) a mounting member covering the aperture on the side of the wall opposite the sink;
(c) mounting bolts extending through the aperture, connecting the sink and mounting member such that the sink and mounting member are in clamping engagement with the wall;
(d) a spout extending from the lavatory sink;
(e) a remote actuating unit mounted adjacent to the sink and accessible to the user of the sink;
(f) a self-closing flush valve attached to the mounting member, the flush valve including a hollow body having two water inlet ports and one outlet port, one of the inlet ports being connected to a water supply, the other inlet port being connectable to a hydraulic pressure fluid inlet tube so that the flush valve is actuatable by a hydraulic remote actuating unit connected to the inlet tube, the flush valve also being mechanically actuatable by a mechanical remote actuating unit, in which case said other inlet port is closed off;
(g) said flush valve further including an annular main valve seat formed upstream from the outlet, a hollow piston assembly in the hollow body adapted to reciprocate within the hollow body, the piston assembly normally closing upon the main valve seat, the piston assembly and the body of the flush valve together defining an upper pressure chamber which normally holds sufficient water to hold the piston assembly closed upon the main valve seat, the piston assembly including:
(1) a by-pass extending through the piston assembly to provide a passageway to the upper pressure chamber;
(2) a by-pass ring which encircles the piston assembly and through which water communicates from the inlet to the by-pass and therethrough to the upper pressure chamber;
(3) means for sealing the piston assembly with the wall of the hollow body while allowing the piston assembly to reciprocate within the hollow body;
(4) a relief valve seat having an annular recess and a sealing ring fitted into the annular recess;
(5) a relief valve assembly normally closing upon the relief valve seat, the relief valve assembly including:
(i) a bell-shaped relief valve head having a threaded bore, and
(ii) a stem threadedly engaging the relief valve head, the length of the stem depending from the relief valve head being adjustable by the extent to which the stem is screwed into the relief valve head,
means for exerting force on the stem so that the relief valve assembly can be tilted off of the relief valve seat when force is exerted on the stem, allowing the water in the upper pressure chamber to be released through the hollow piston assembly so that water pressure from the inlet raises the piston assembly off of the main valve seat, opening the valve and allowing water to flow from the inlet to the outlet;
(h) a conduit extending through the aperture from the flush valve to the spout for delivering water to the user of the lavatory sink when the flush valve is actuated; and
(j) means for transmitting force from the remote actuating unit to the flush valve, the force transmitting means extending from the remote actuating unit through the aperture in the wall to the flush valve so that the flush valve mechanism can be actuated by the user of the lavatory sink; and the aperture being large enough so that the mounting bolts, conduit, and force-transmitting means all extend through the aperture without the need for accurate roughing-in.

4,620,329

VENTILATED TOILET SEAT

John Wix, 16064 County Rd. 8, Meeker, Colo. 81641

Filed Jun. 17, 1985, Ser. No. 745,498
Int. Cl.[4] A47K *13/00*; E03D *9/04*
U.S. Cl. 4—217 **4 Claims**



1. A toilet ventilation system adapted for use with a toilet bowl of conventional design comprising:
(a) a toilet seat of conventional outer contour having a forward extremity, rear extremity, flat bottom surface and rounded upper surface, and characterized in having a plane of symmetry that vertically bisects said forward and rear extremities, the interior of said seat being provided with a channel that substantially circumscribes the seat, said channel communicating with said bottom surface by means of a number of downwardly directed apertures, and communicating with said rear extremity by paired parallel vent passageways,
(b) paired first externally threaded circular cylindrical tubes which engage said vent passageways, each extending to a rear terminus behind the rear extremity of the seat,
(c) paired first right angle pipe fittings having female threading which engages the rear terminus of each of said first cylindrical tubes,
(d) paired second right angle pipe fittings which threadably engage said first right angle fittings in a manner to be outwardly directed with respect to said plane of symmetry, and provided with internal threading,
(e) paired second externally threaded circular cylindrical tubes, each having an upper extremity that engages the internal threading of said second right angle pipe fittings, and a downwardly disposed lower extremity, said second tubes being adapted to pass through conventional vertically disposed channels within said bowl,
(f) conduit means communicating with the lower extremities of said second cylindrical tubes and extending to a downstream extremity at a location remote from said bowl,
(g) electrically activated air-moving means associated with the downstream extremity of said conduit means,
(h) pressure-responsive switch means interactive between the conventional rim of the bowl and the bottom surface of the seat in a manner to energize said air-moving means when the seat is in use, and
(i) paired eyebolts each pivotably engaging a horizontally disposed portion of said right angle pipe fittings and having a threaded stem adapted to engage the rear extremity of a lid to permit pivotal movement of said lid in a vertical path.

4,620,330

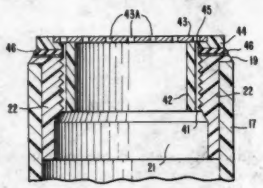
UNIVERSAL PLASTIC PLUMBING JOINT

Lewis B. Izzi, Sr., Shelby, N.C., assignor to Plastic Oddities, Inc., Shelby, N.C.

Filed Oct. 4, 1983, Ser. No. 538,895
Int. Cl.[4] E03C *1/26*
U.S. Cl. 4—288 **6 Claims**

1. A flush to the surface mountable universal plumbing coupling joint adaptable for use as a cleanout opening, a drain

assembly, a plastic to plastic or metal pipe adapter, and the like, comprising an integral plastic unit characterized by a barrel assembly having an outer cylindrical surface, a thin circular retainer flange extending circumferentially at a right angle from the outer cylindrical surface of said barrel assembly flush with one end thereof and being adapted to lie substantially flush on a plane mounting surface without danger of engaging a foot of a passerby and slightly protruding from said plane mounting surface, said cylindrical barrel assembly below said flange being extended below the floor surface, screw threads extending internally from the flange end along a major portion of the barrel assembly interior surface length, the threaded portion having a predetermined wall thickness for receiving a



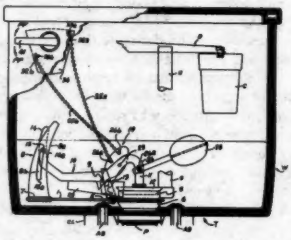
coaxially positioned screw threaded fitting mated thereinto, and a skirt portion on said barrel assembly extending from the end of the threads to the other end of said barrel assembly defined by a thinner wall thickness than said predetermined thickness, said outer cylindrical surface of said barrel assembly extending from said thin circular retainer flange to the end of said skirt portion at the other end of said barrel assembly and having a circumferential dimension for fitting its entire length inside the end of plastic pipes of standard size to permit solvent welding thereinto, and said skirt portion of said barrel assembly presenting an inner circumferential dimension to permit receipt of a pipe thereinto in an abutting fitting relationship against the end of the threaded wall portion.

4,620,331

SELECTIVE FLUSHER FOR WATER CLOSET

Esteban N. Sagucio, 128 K-7 Street, Kamias, Quezon City, Philippines (3008)

Filed Jul. 12, 1985, Ser. No. 754,611
Int. Cl.[4] E03D *1/14*
U.S. Cl. 4—325 **4 Claims**



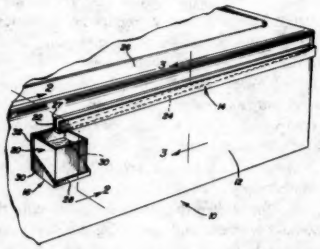
1. In a flush tank which has a chamber for water, a float controlled water inlet valve and a flush pipe with a gasket and a valve seat with an offset standpipe disposed at the top of said flush pipe, a selective flushing device comprising a horizontally disposed elongated base plate having a circular slot at the front end portion thereof, said front end portion being connected to the top of said flush pipe, an upstanding fulcrum post secured to said elongated base plate close to the valve seat, said fulcrum post having a transverse fulcrum pin disposed upwardly of said base plate, a tail guide secured to said base plate at the rear end thereof, a horizontally disposed generally S-shaped valve lever, said generally S-shaped valve lever having a downwardly extending saddle generally at the lower midportion thereof normally seated pivotally on said fulcrum pin of said fulcrum post, a vertical slot extending through the midportion thereof, a downwardly extending front portion and an upwardly arcuate rear portion; a flush valve secured to the downwardly extending front end of said generally S-shaped valve lever, a gauge float adjustably secured to the front end portion of said generally S-shaped valve lever, a main float secured to the lower side of the midportion of said generally S-shaped valve lever; a transverse tail pin secured to the upwardly arcuate rear portion of said generally S-shaped valve lever; a catch plate disposed pivotally in the vertical slot of said generally S-shaped valve lever, said catch plate having a tail portion with a forwardly extending tip and a rounded recess upwardly of said forwardly extending tip; and means for selectively operating said catch plate and said generally S-shaped valve lever.

4,620,332

BATHTUB SPLASH COLLECTOR

Owen A. Laird, 219 E. Main St., Bethalto, Ill. 62010

Filed Oct. 24, 1985, Ser. No. 790,897
Int. Cl.[4] A47K *3/00*
U.S. Cl. 4—559 **9 Claims**



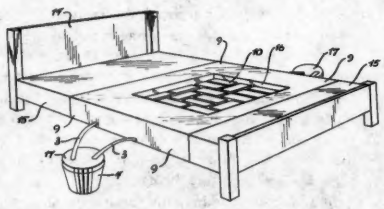
1. A splash collector for a bathtub comprising an elongate channel, securement means for securing the channel along an outside wall of the tub below the rim of the tub, the channel having an open end and a base wall adapted to extend down toward the open end when the channel is secured as aforesaid, a collector cup, a stand for the collector cup, and further securement means for securing the stand to said outside wall of the tub below the open end of the channel for supporting the cup to receive water running down the channel.

4,620,333

INCONTINENT BED FACILITY

Russell F. Ritter, 132 Concord Dr., Buffalo, N.Y. 14215

Filed May 21, 1985, Ser. No. 735,846
Int. Cl.[4] A61G *7/02*
U.S. Cl. 5—90 **18 Claims**



1. A liquid discharge unit comprising a toilet tray, a support-

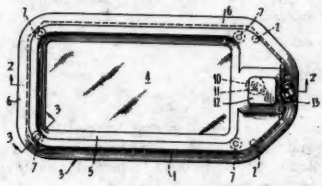
ing surface and disposal means, said toilet tray comprising a top open portion and at least one opening in its lower portion, said toilet tray having positioned above said top open portion said supporting surface, said supporting surface comprising a substantially non-corrosive supporting net, said tray having said drain openings in its said lower portions which are adapted to facilitate the flow of liquid therethrough to a disposal means, positioned above and supported by said net is at least one sealed cell foam block, positioned above said block is a sealed foam sheet having apertures therein to provide conduits for liquids to pass therethrough and eventually to said disposal means.

4,620,334

INFANT ROCKER

Alec Robinson, 465 Victoria Street, West Melbourne, Victoria, Australia (3003)

Filed Aug. 16, 1982, Ser. No. 408,245
Int. Cl.[4] A47D *9/02*
U.S. Cl. 5—108 **13 Claims**



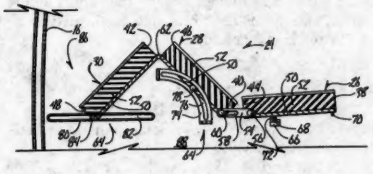
1. An infant rocker comprising:
a base;
support means for supporting an infant;
suspension means for mounting said support means on said base and allowing a predetermined degree of movement between the base and the support means substantially in a plane parallel to the base; and
drive means for gently and rhythmically moving the support means relative to the base in an orbital motion pattern in said plane to lull an infant.

4,620,335

LOWER BED STRUCTURE FOR A RECREATIONAL VEHICLE

John N. Dodgen, Fort Dodge, Iowa, assignor to Dodgen Industries, Inc., Humboldt, Iowa

Filed Dec. 21, 1984, Ser. No. 685,041
Int. Cl.[4] B60N *1/10*; A47C *17/13, 17/16*
U.S. Cl. 5—118 **2 Claims**



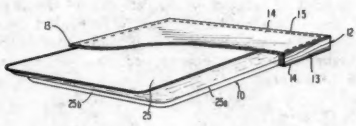
1. A bed structure for a vehicle having forward and rearward ends and opposite side walls, said bed structure comprising:
a plurality of interconnected elongated cushions each having a forward edge, a rearward edge, and opposite sides; and
a track means connectible to each of said side walls of said vehicle for supporting said cushions adjacent said opposite sides thereof;
said cushions being movable along said track means between a first position wherein a couch is formed by said cushions and a second position wherein a substantially flat bed surface is formed by said cushions;
said plurality of cushions including a first cushion, a second cushion and a third cushion;
each of said track means including a first bracket member for maintaining said first cushion in said first or second position, a second bracket member for guiding said second cushion between said first and second positions, and a third bracket member for guiding said third cushion between said first and second positions; and
said first bracket member having an aperture therein and said first cushion having a first peg which is received in said aperture of said first bracket member when said plurality of cushions are in said first position and a second peg which is received in said aperture of said first bracket member when said plurality of cushions are in said second position.

4,620,336

BODY SUPPORT FOR BED OR SEAT

John E. Miller, Tupelo, Miss., assignor to Parma Corporation, Denton, N.C.

Continuation-in-part of Ser. No. 367,874, Apr. 13, 1982, Pat. No. 4,489,450. This application Dec. 8, 1983, Ser. No. 559,235
The portion of the term of this patent subsequent to Dec. 25, 2001, has been disclaimed.
Int. Cl.[4] A47C *23/02*
U.S. Cl. 5—249 **53 Claims**



1. A body support such as a mattress, seat or a box spring comprising in combination, a body having upper and lower frames movable relative to each other between a spaced apart use position and a storage position wherein the frames are closer together, a plurality of support members between said frames movable between retracted positions when the frames are in the storage position and erect positions when the frames are in the use position, and releasable means securing the support members in the erect positions against movement to said retracted positions and being releasable to permit said support members to move to said retracted positions for placing the frames into the storage position, said releasable means being connected to upper and lower frames in both of said use and storage positions.

4,620,337

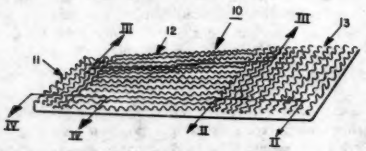
CONVOLUTED SUPPORT PAD FOR PREVENTION OF DECUBITUS ULCERS AND APPARATUS FOR MAKING SAME

H. Albert Williams, and Janet L. Williams, both of Canyon Country, Calif., assignors to Bio Clinic Corporation, Rancho Cucamonga, Calif.

Filed Dec. 24, 1984, Ser. No. 685,320
Int. Cl.[4] A47C *27/14*
U.S. Cl. 5—464 **9 Claims**

1. A convoluted foam pad for supporting a human body on a bed, said pad comprising:
a first head supporting section and a second foot and leg supporting section, each of said sections having a convoluted supporting surface comprising adjacent rows of peaks, said peaks in each row being separated by depressions forming bases, said peaks in adjacent rows being staggered to form a checker board pattern; and

a torso supporting section intermediate said first and second supporting sections, said torso supporting section having a ribbed convoluted supporting surface comprising substantially parallel ribs separated by substantially parallel valleys extending longitudinally between said first and second supporting sections;



said pad having a head end and a foot end, the peak-to-base ratio of said head supporting section varying from about 2.7 at said head end to about 1.7 immediately adjacent said intermediate torso supporting section, said foot and leg supporting section also having a peak-to-base ratio varying from about 2.7 at said foot end to about 1.7 immediately adjacent said intermediate section.

4,620,338

PROCESS FOR THE CONTINUOUS DYEING AND/OR FINISHING OF WET TEXTILE WEBS

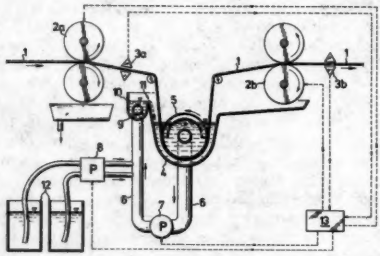
Hans-Ulrich von der Eltz, Frankfurt am Main, and Peter Oppitz, Kelkheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 488,035, Apr. 25, 1983, Pat. No. 4,546,624. This application Jun. 3, 1985, Ser. No. 740,381

Claims priority, application Fed. Rep. of Germany, May 5, 1982, 3216731

Int. Cl.[4] D06B *23/26*

U.S. Cl. 8—151 **10 Claims**



1. A process for applying in a continuous and level manner an aqueous impregnating liquor containing at least one treatment agent to a water-wet textile web comprising the steps of partially dewatering the water-wet textile web down to a certain residual moisture content, continuously measuring the moisture content of the web after the dewatering step and before the liquor is applied thereto, continuously passing the dewatered web through an impregnating trough over a liquor exchange unit therein, continuously applying the liquor over the width of the web by at least partially replacing the moisture already present in the textile material by passing circulating impregnated liquor through the web until a predetermine quantity of impregnating liquor is absorbed by the web, partially dewatering the textile web down to a certain residual moisture content after the application of liquor thereto, constantly measuring the moisture content of the web after the second dewatering step, controlling the moisture content of the web from the measured values such that the moisture content after the second dewatering step is higher than after the first dewatering step, and compensating for the reduction in concentration of treatment agent in the impregnating liquor, due to the liquor being diluted, and the decrease in liquor volume, due to absorption of liquid by the textile material by metering liquor to the impregnating trough as a function of the measured difference in liquor after the first and second dewatering steps.

4,620,339

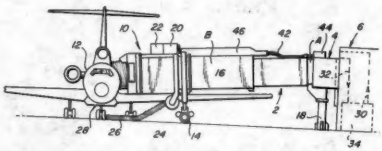
COMBINED PASSENGER LOADING BRIDGE AND UTILITIES CONDUIT BETWEEN AIRPORT TERMINAL AND PARKED AIRCRAFT

Thomas E. Shepheard, Norfolk, Va., assignor to Air-A-Plane Corporation, Norfolk, Va.

Filed Nov. 18, 1985, Ser. No. 798,960

Int. Cl.[4] E01D *1/00*

U.S. Cl. 14—71.5 **5 Claims**



1. In combination, an aircraft loading bridge having an inner end tunnel member attached to a terminal, an outer end tunnel member adapted to be connected to a parked aircraft and an extensible connection between said members,

a flexible tube characterized by its ability to be bent back 180° upon itself to form a loop,

said tube being supported on the bridge and having one end attached to the inner end tunnel member and having a looped-back outer end portion overlapping the outer end tunnel member of the bridge, the looped-back portion of the tube having a free end attached to the outer end tunnel member of the bridge,

a liquid heat transmitting system including a first heat exchanger affixed at the terminal end of the inner tunnel member of the bridge and a second heat exchanger on the outer end tunnel member of the bridge,

liquid supply and return conduits connected between said heat exchangers,

said liquid supply and return conduits having flexible portions disposed within said tube and extending from end-to-end therein,

and an air conduit having one end connected to the second heat exchanger and a free end adapted to be connected to the parked aircraft and a fan for propelling air through the second heat exchanger and the air conduit to the aircraft,

said first heat exchanger providing a means for heating and cooling the liquid flowing through the supply and return conduits, and means for circulating the heated or cooled liquid through said conduits.

4,620,340

MOP-WRINGING DEVICES

Jan Bohacek, Lower Kingswood, England, assignor to Jani-Jack Limited, Surrey, England

Filed Apr. 26, 1985, Ser. No. 727,829

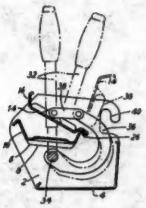
Claims priority, application United Kingdom, Apr. 27, 1984, 8410892

Int. Cl.[4] A47L *13/146*

U.S. Cl. 15—261 **10 Claims**

1. A mop-wringing device having a main frame comprising a support plate, a pressure plate displaceable on said frame to press excess moisture from a mop head inserted between the plates, operating means for displacing the pressure plate between a closed position adjacent the support plate and an open position further spaced from said plate, connection means

between the pressure plate and the frame providing a pivoting axis adjacent an edge of the pressure plate, the pressure plate being pivotable by the operating means about said connection to open a gap between the two plates, said connection also permitting limited movement of the pivoting axis of the pressure plate towards and away from the support plate, said operating means comprising an operating member and toggle link means connecting said operating member to the pressure plate, said toggle link means being moved towards an over-centre position by movement of said operating member for displacing the pressure plate to apply pressure to an inserted mop head.



4,620,341

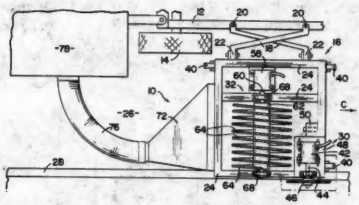
CURB AND GUTTER MACHINE

Robert B. Rigby, P.O. Box 83, Nokomis, Fla. 33555-0083

Filed Jun. 3, 1985, Ser. No. 740,342

Int. Cl.[4] E01H *1/08, 1/04*

U.S. Cl. 15—339 **13 Claims**



1. A curb and gutter machine used in combination with a vehicle, said machine comprising: a housing assembly attached to the vehicle frame, said housing assembly being adjustable with respect to the vehicle and with respect to the supporting surface along which the vehicle moves; cutter means operatively attached to said housing assembly, said cutter means comprising a cutting head whereby material adjacent the supporting surface may be trimmed; a sweeper means operatively attached to said housing assembly, said sweeper means comprising a brush head whereby material trimmed by said cutting head may be swept; vacuum head means mounted on said housing assembly in receiving relation to material swept from the supporting surface by said sweeper means; and material collection means attached to the vehicle, said vacuum head means being in interconnecting relation between said housing assembly and said material collection means whereby material swept from the supporting surface may pass through said vacuum head means into said material collection means.

4,620,342

METHOD OF MANUFACTURING SWIVEL BEARING FOR SWIVEL CASTERS AND SWIVEL BEARINGS MANUFACTURED ACCORDINGLY

Berthold Haussels, Wermelskirchen, Fed. Rep. of Germany, assignor to Haco-Rollen-Vertrieb GmbH & Co. KG, Wermelskirchen, Fed. Rep. of Germany

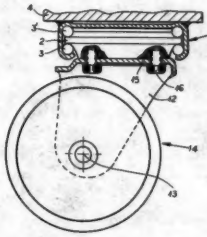
PCT No. PCT/DE84/00236, § 371 Date Jul. 9, 1985, § 102(e) Date Jul. 9, 1985, PCT Pub. No. WO85/02151, PCT Pub. Date May 23, 1985

PCT Filed Nov. 8, 1984, Ser. No. 760,733

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1983, 3341063

Int. Cl.[4] B60B *33/00;* **B21D** *53/10;* **F16C** *19/02, 33/00*

U.S. Cl. 16—18 R **7 Claims**



1. A method of making a swivel bearing for a swivel caster which comprises:

initially forming a metallic cylindrical cup wall upon a cup bottom so that the cup wall opens away from said bottom and extends axially by a distance above said cup bottom exceeding an axial dimension of a journal assembly consisting of a pair of circular arrays of ball bearings directly sandwiching a circular swivel plate adapted to rotatably carry a caster between them;

inserting said journal assembly through an open end of said cup wall into the cup formed by said wall and by said bottom whereby one of said arrays lies in direct contact with said bottom and the other of said arrays is spaced below an edge of said wall; and

deforming an upper margin of said open end of said cup wall inwardly through at least 90° over the other of said arrays for retaining said assembly in said cup, while directly defining a race for the bearings of said other array with the inwardly deformed margin, and establishing the running play for both of said arrays of bearings, so that the inwardly deformed upper margin has an inner diameter less than that of said plate and said arrays.

2. Swivel bearing for a swivel caster made by the method of claim **1** with a swivel bearing cup exhibiting a cylindrical cup wall formed over inwardly on its free end and a swivel bearing plate journaled therein by means of two rows of bearing balls, characterized by the fact that the swivel bearing cup **(1)** inclusive of its cylindrical cup wall, consists of a one-piece, suitably formed sheet metal element **(1', 1")**.

4,620,343

THREE WAY ADJUSTABLE DOOR HINGE HAVING COOPERATING WEDGE SURFACES

Alfred Grass, Konsumstrasse 20, A-6973 Höchst, Austria

Filed Sep. 23, 1983, Ser. No. 534,595

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1982, 3235402

Int. Cl.[4] E05D *7/04*

U.S. Cl. 16—236 **1 Claim**

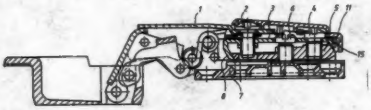
1. A door hinge of the type comprising an elongated base plate for fixedly being secured to a door frame and having a rear surface which is adapted to be in a door frame plane, an elongated hinge arm lengthwise overlying the base plate in

front of the same and having one end portion which is spaced lengthwise beyond the base plate and to which a door supporting element is connected for swinging about an axis that is transverse to the length of the hinge arm and parallel to said plane, an elongated intermediate plate confined between the hinge arm and the base plate and to which the hinge arm is connected for relative swinging through a range of positions of inclination adjustment that carry its said end portion towards and from said plane and for securement in any selected one of those positions, and an elongated adjusting plate confined between the intermediate plate and the base plate, to which the intermediate plate has a heightwise adjustable connection and which is connected with the base plate for lengthwise sliding relative thereto through a range of positions of lengthwise adjustment and for securement in any selected one of those positions, said door hinge being characterized by:

said heightwise adjustable connection between the intermediate plate and the adjusting plate comprising

(1) a screw having

(a) a head overlying the front face of the intermediate plate and



(b) a shank extending through a slot in the intermediate plate that is intermediate its ends and is elongated transversely to its length, said shank having a threaded portion which is received in a matingly threaded hole in the adjusting plate, intermediate the ends thereof, so that tightening of said screw draws the intermediate plate flatwise rearward towards the adjusting plate;

(2) means on each end of the intermediate plate defining a wedge surface which extends widthwise relative to the intermediate plate and is inclined obliquely rearward at an acute angle to the axis of said screw, both of said wedge surfaces being inclined in the same direction, and

(3) means on each end of the adjusting plate defining a cooperating complementary shaped wedge surface for each of said wedge surfaces on the intermediate plate, each of said cooperating wedge surfaces being flatwise opposingly engaged by its wedge surface on the intermediate plate so that the weight of a door on said door supporting element, tending to rotate the intermediate plate about said screw and relative to the adjusting plate, and causing the cooperating wedge surfaces to wedgingly engage each other.

4,620,344

FRICTION APPLYING ASSEMBLY

Walter E. Lewis, Jr., Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Aug. 15, 1985, Ser. No. 765,819

Int. Cl.[4] E05C *17/64;* E05D *1/108*

U.S. Cl. 16—337 **7 Claims**

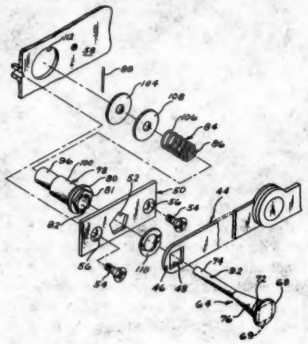
1. A friction applying assembly for a panel movable from a first position to a second position comprising:

a mounting plate rigidly secured to the panel, said plate having a non-circular aperture,

a hinge support arm having at one end thereof a non-circular aperture,

a bolt arm having a head at one end inserted into the non-circular aperture of the hinge support arm to prevent relative movement between the bolt arm and hinge support arm, the bolt arm being elongated with a large diameter section adjacent the head and a smaller diameter section at the opposite end and a tapered conically shaped intermediate section between the large diameter section and small diameter section,

a bushing having an elongated body with one end inserted into the non-circular aperture of the mounting plate and secured thereto to prevent relative movement between the bushing and mounting plate, and an internal tapered conically shaped cavity complementary to and in frictional engagement with the intermediate section of the bolt arm,



a compression spring having one end seated against the bushing and the opposite end retained by fastening means on the smaller diameter section of the bolt arm, whereby the bushing is urged into movable frictional engagement with the tapered conically shaped intermediate section of the bolt arm.

4,620,345

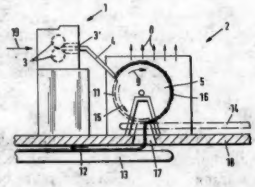
APPARATUS FOR CRIMPING AND SETTING SYNTHETIC FIBER GROUPS

Heinz Fleissner, Riehen, Switzerland, assignor to Fleissner GmbH & Company, Switzerland

Continuation of Ser. No. 496,258, May 19, 1983, abandoned. This application Aug. 5, 1985, Ser. No. 762,502

Int. Cl.[4] D02G *1/12, 1/20*

U.S. Cl. 28—266 **3 Claims**



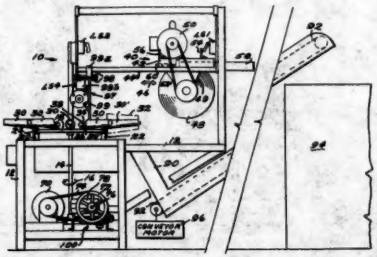
1. An apparatus for crimping synthetic fiber groups, bundles or strands, which comprises a pair of pressure rolls and a stuffer box arranged thereafter for imparting a crimp to said synthetic fiber; a vertically inclined chute for transporting hot crimped fiber discharged from said stuffer box downwardly and forwardly by gravity; a sieve drum for setting the crimp imparted to said synthetic fiber, traversed by cooling air from an outside thereof toward the inside and revolving in a driven fashion, said sieve drum being arranged downstream of and below the stuffer box; a fan for producing a suction draft disposed at an end face of the sieve drum; said vertically inclined chute being arranged between a transporting surface of the sieve drum, which surface is under the suction draft, and a discharge end of the stuffer box; the crimped fiber displaced from the stuffer box being immediately transported down the

vertically inclined chute and thereafter laid in a still dense crimped structure on the sieve drum and the fan drawing cooling air through said crimped structure to set the crimp thereon by shock-like cooling; unravelling of the still labile crimped structure being prevented due to the arrangement of the inclined chute and the sieve drum; and an endless belt for transporting of the set, crimped fiber to a further treatment in the same direction of travel as the crimped fiber on the rotary sieve drum, said belt being arranged immediately underneath the sieve drum whereby the set, crimped fiber is directly dropped onto the endless belt without disturbing the dense crimped structure of the crimped fiber.

4,620,346
DEVICE TO AID IN THE REMOVAL OF RESIDUAL TEXTILE MATERIAL FROM A CORE ELEMENT

Jack Loggins; Walt Chester, and Leon Walker, all of Dahlonega, Ga., assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed Jun. 29, 1984, Ser. No. 626,120
Int. Cl.[4] B65H *73/00*
U.S. Cl. 28—295 **14 Claims**



14. A device to aid in the removel of residual textile material from a core element comprising in combination:

a platform mounted for rotational movement about an indexing axis and including plural support means each for supporting a respective one of a plurality of core elements and to establish respective core element positions radially of said indexing axis, at least one of said core element positions corresponding to a cutting position;

indexing means connected to said platform for rotating said platform about said indexing axis to thereby sequentially index said core elements into said cutting position;

cutting means in alignment with said cutting position and reciprocally movable between starting and ending positions relative to said cutting position for cutting residual textile material from said core element in said cutting position;

moving means operatively connected to said cutting means for reciprocally moving said cutting means between said starting and ending positions;

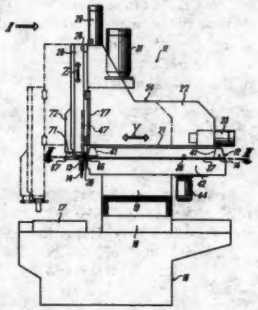
control means operatively connected to said indexing means and said moving means for synchronizing the rotation of said platform with the reciprocal movement of said cutting means so that said moving means moves said cutting means into said ending position in response to said indexing means indexing a core element into said cutting position; and

sharpening means movable from an initial position to a position into engagement with said cutting means for sharpening said cutting means, said control means including means to stop reciprocal movement of said cutting means upon movement of said sharpening means from said initial position towards said engagement position with said cutting means and to resume reciprocal movement of said cutting means upon return of said sharpening means to said initial position.

4,620,347
MACHINING CENTER WITH MAGAZINE FOR SPARE TOOLS

Gerhard Stark, Beethovenstr. 21, D-7312 Notzingen, and Klaus Hoffmann, Bodnegg, both of Fed. Rep. of Germany, assignors to Gerhard Stark, Notzingen, Fed. Rep. of Germany

Filed May 14, 1984, Ser. No. 609,872
Claims priority, application Fed. Rep. of Germany, May 13, 1983, 3317554
Int. Cl.[4] B23Q *3/157*
U.S. Cl. 29—26 A **20 Claims**

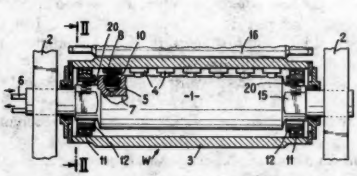


1. A machine for removal of material from workpieces by any one of a plurality of tools, comprising a frame; a supporting device on said frame; a tool spindle mounted on said supporting device; an open-and-shut tool storing device on said frame, at least one of said devices being movable to a predetermined position with reference to the other of said devices preparatory to tool transfer between said spindle and said storing device, and said storing device being movable between a shut position in which said storing device has a first storage capacity, and an open position in which said storing device has a greater second storage capacity and defines a transfer location for the transfer of tools between said spindle and said storing device, said storing device being capable of assuming said open position on movement of said one device to said predetermined position; and means for moving said one device to and from said predetermined position, and for effecting relative movement of said spindle and said storing device on movement of said one device to said predetermined position to thereby effect actual transfer to tools between said spindle and said storing device at said transfer location.

4,620,348
CONTROLLED DEFLECTION ROLL

Heinz Güttinger, Schaffhausen, Switzerland, assignor to Sulzer-Escher Wyss Aktiengesellschaft, Zürich, Switzerland

Filed Aug. 16, 1982, Ser. No. 408,694
Claims priority, application Switzerland, Sep. 21, 1981, 6072/81
Int. Cl.[4] B21B *13/02*
U.S. Cl. 29—116 AD **11 Claims**



1. A controlled deflection roll comprising:

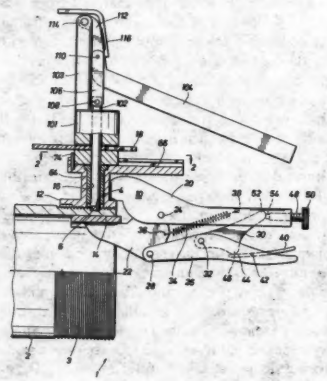
a stationary roll support;
a rotatable roll shell mounted to be rotatable about said stationary roll support;
support elements for supporting said rotatable roll shell upon said stationary roll support;
means for enabling displacement of the rotatable roll shell in relation to the stationary roll support in a press plane within a predetermined mobility range;
supporting members interposed between the stationary roll support and the rotatable roll shell; and
said supporting members serving for continuously taking-up the inherent weight of the rotatable roll shell and parts of the roll movable in conjunction with the rotatable roll shell within the mobility range of the rotatable roll shell in relation to the stationary roll support at least during operation of the controlled deflection roll.

4,620,349

APPARATUS FOR ESTABLISHING PIPE JOINT SEALS

Ben D. Terral, P.O. Box 1799, Huntsville, Tex. 77340

Filed Jul. 16, 1985, Ser. No. 755,338
Int. Cl.[4] B23P *19/02*
U.S. Cl. 29—235 **10 Claims**



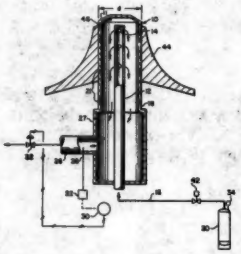
1. Apparatus for establishing a fluid seal in the threaded wall of a tubular member, comprising:
clamp means for clamping said apparatus to said wall;
guide means carried by said clamp means defining a first aperture transverse to the longitudinal axis of said tubular member and a cylinder support member;
guide cylinder means defining a second aperture and a sealing element receiving slot therethrough carried by said cylinder support means, said guide cylinder means being slidably positionable along said cylinder support means in a first position wherein said first and second apertures are in registry and a second position where a drill can be inserted into said first aperture to drill a radial blind bore in the threaded tubular wall;
punch shaft means slidably disposable in said first and second apertures;
sealing element strip means slidable along said receiving slot; and
means for moving said punch shaft means to punch a sealing plug out of said sealing strip and moving said sealing plug into said blind bore in the threaded wall of said tubular member.

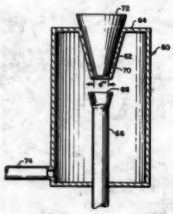
4,620,350

APPARATUS FOR INTERFERENCE-FITTING MALE AND FEMALE MEMBERS

Scott W. Thurber, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 396,187, Jul. 8, 1982, Pat. No. 4,555,839.
This application Sep. 5, 1985, Ser. No. 772,969
Int. Cl.[4] B23P *19/02*
U.S. Cl. 29—235 **21 Claims**





1. An apparatus for use in fitting a resilient non-metal workpiece having a glass transition region at cold temperatures to a second workpiece by means of interference fit which comprises a hollow mandrel closed at one end thereof for compressing and holding at least a portion of said resilient workpiece in its compressed state, said closed end having an annular tapered workpiece compressing surface, tube means positioned within said mandrel for supplying adjacent to said closed end a refrigerant to cool said compressed portion in contact therewith and with said compressed portion retaining said cooled compressed shape thereof after removal thereform, and means for recovering the resulting warmed refrigerant from said mandrel whereby upon combining said cooled compressed shape retaining portion of said first workpiece in telescopic arrangement with said second workpiece and allowing said first workpiece to return to ambient temperature and unstressed shape to attain in interference fit with said second workpiece.

4,620,351

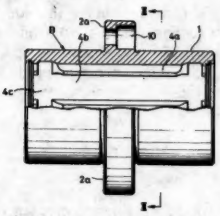
UNLIMITED SLIDING BALL SPLINE ASSEMBLY

Hiroshi Teramachi, 34-8, Higashi-Tamagawa 2-Chome, Setagaya-ku, Tokyo 158, Japan

Continuation of Ser. No. 465,926, Feb. 14, 1983. This application Apr. 8, 1985, Ser. No. 721,124
Claims priority, application Japan, Feb. 13, 1982, 57-20659; Feb. 13, 1982, 57-20660; Feb. 16, 1982, 57-22032
Int. Cl.[4] B21D *53/10*; F16C *3/03*
U.S. Cl. 29—149.5 R **6 Claims**

1. A method formanufacturing the outer cylinder of an unlimited sliding ball spline bearing, comprising the steps of:
forming a circumferentially extending mounting flange around the outer surface of a thick-walled tubular body;

forming longitudinal guide grooves on the inner surface of said tubular body, said guide grooves having a sufficient diameter for accepting a plurality of rolling balls therein; and

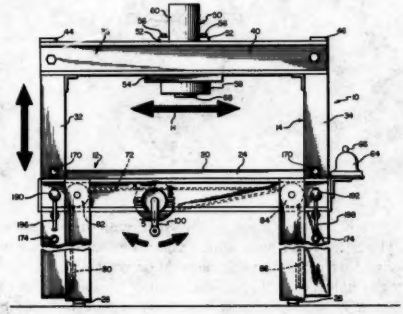


subjecting said tubular body to a process of cementation hardening to form a crown on the inner surface thereof, opposite said mounting flange on the outer surface.

4,620,352
SHOP PRESS

John Sulej, 19335 Oak Ave., Country Club Hills, Ill. 60477

Continuation of Ser. No. 572,197, Jan. 19, 1984, abandoned. This application Feb. 18, 1986, Ser. No. 831,052
Int. Cl.[4] B23P *19/04*
U.S. Cl. 29—251 **8 Claims**

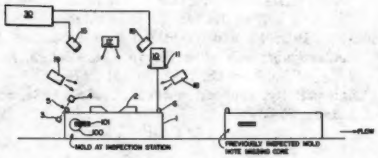


1. A shop press comprising, in combination; a table including a work surface capable of supporting a workpiece; a ram assembly for supporting a hydraulic actuator, and said ram assembly being mounted for vertical movement with respect to said table, said ram assembly including a horizontal head defined by a pair of spaced structural members with a hydraulic actuator support head being adjustably mounted between said structural members for movement along the length of said horizontal head, a pair of elongate vertically disposed ram support legs, one being positioned on each side of the table, with said support legs being attached to opposite ends of said horizontal head at the upper ends thereof and extending past the table work surface a sufficient distance such that upon lowering of the ram assembly the legs will engage a floor upon which the table is mounted before the horizontal head will engage the work surface of the table; guide means on each side of said table embracing said ram support legs while permitting vertical movement of the entire ram assembly; and elevating means for said ram assembly carried by said table and said vertically disposed ram support legs, such that such elevating means is concealed within the confines of said table and said ram support legs and is disposed below the working surfce of said table, said elevating means including a drum member rotatably mounted below the work surface of said table, a first set of pulleys, one said pulley carried by the lower portion of each of said ram support legs, a second set of pulleys mounted to said table and disposed below the work surface of said table, and cable means affixed to said drum means and engaged over said pulleys such that the drum member may be operated to wind and unwind the cable thereon therby raising and lowering said ram assembly, and one-way brake means operably connected with said drum member for inhibiting cable unwinding motion of the drum which would lower the ram assembly, but freely permitting cable winding motion of said drum to raise said ram assembly.

4,620,353
ELECTRO-OPTICAL AND ROBOTIC CASTING QUALITY ASSURANCE

Timothy R. Pryor, 105 Centennial Dr., Tecumseh, Ontario, Canada

Continuation of Ser. No. 541,578, Oct. 13, 1983, abandoned, which is a division of Ser. No. 273,385, Jun. 15, 1981, Pat. No. 4,409,718. This application Feb. 18, 1986, Ser. No. 830,490
Int. Cl.[4] B23Q *17/00;* **B22D** *46/00*
U.S. Cl. 29—407 **23 Claims**



1. In a continuous casting process, a method for automatically inspecting cores and molds, said method comprising:
providing an inspection station along the path of travel of the core or mold at the location at which the material to be cast is poured,
illuminating a core or mold with light from a light source located at said inspection station,
detecting light from the core or mold with an electrooptical detector to determine a dimension of or defect in the core or mold, and
controlling pouring of the material to be cast in accordance with the analyzing step such that pouring of said material into a mold or core being inspected at the inspection station is aborted when that core or mold is determined to be incorrect.

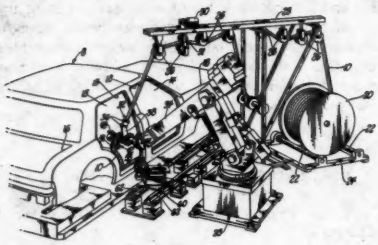
4,620,354
METHOD OF APPLYING WEATHERSTRIP TO A VEHICLE BODY OPENING

Edward C. Hess, Farmington Hills, and Charles J. Anglewicz, Romeo, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 28, 1985, Ser. No. 737,931
Int. Cl.[4] B23P *17/00, 21/00;* **E06B** *7/16*
U.S. Cl. 29—417 **2 Claims**

1. A method of using a robot to apply a weatherstrip to a flange extending about an opening in a vehicle body such as a door, frunk or hood opening comprising the steps of:
having the robot coil the weatherstrip on an end effector thereon,
having the robot track the flange therearound with the end effector while unwinding and rolling the weatherstrip thereon starting from a predetermined starting position on the flange to a stop position a predetermined distance short of the starting position,
having the robot lift the unwound weatherstrip away from the flange with the end effector at the stop position,
grasping and holding the lifted weatherstrip at the stop position,
cutting-off the held weatherstrip at a point determined by

said predetermined distance so that the weatherstrip being applied to the flange will then abut end-to-end, and



having the robot retrieve the cut end of the weatherstrip with the end effector and apply same to the flange.

4,620,355

METHOD FOR MANUFACTURING A HEAT INSULATING SASH BAR

Nobushige Doguchi, and Yoshitaka Nagai, both of Toyama, Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed May 18, 1982, Ser. No. 379,289

Claims priority, application Japan, Jun. 1, 1981, 56-83958; Jun. 1, 1981, 56-83959

Int. Cl.⁴ B23P *17/00*

U.S. Cl. 29—418 **2 Claims**

1. A method for manufacturing a heat insulating sash bar comprising two oppositely positioned face members connected with two connecting members formed of a heat insulating material therebetween which comprises the steps of

(a) placing a first belt-like strip of sheet made of a heat insulating material on and bridging a first pair of two spaced oppositely positioned intermediate flanges each on one of the face members integrally connected together with at least one inner connecting part, each of the face members being provided with two intermediate flanges to form the first pair of the intermediate flanges remote from the inner connecting part and a second pair of the intermediate flanges closer to but not in direct contact with the inner connecting part with the respective oppositely positioned intermediate flanges on the other face member, to form a first groove-like channel opening at a side of the inner connecting part provided with the first belt-like strip of sheet as the bottom and with the two face plates of the face members as the side walls,

(b) filling the first groove-like channel with a pourable heat insulating material to form a first connecting member which connects the face members with each other,

(c) removing at least partly the inner connecting part over whole length thereof,

(d) placing a second belt-like strip of sheet made of a heat insulating material on and bridging the second pair of the intermediate flanges to form a second groove-like channel including the sections of the inner connecting part having been at least partly removed and opening at the other side of the inner connecting part provided with the second belt-like strip of sheet as the bottom and with the face plates of the face members as the side walls, and

(e) filling the second groove-like channel with a heat insulating material to form a second connecting member which connects the face members with each other and covers the sections of the inner connecting part having been at least partly removed.

4,620,356

METHOD FOR FASTENING DRIVE ELEMENTS ON A CYLINDRICAL SHAFT

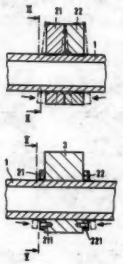
Wolfgang Maus, and Helmut Swars, both of Bergisch-Gladbach, Fed. Rep. of Germany, assignors to Interatom GmbH, Bergisch-Gladbach, Fed. Rep. of Germany

Filed Jul. 31, 1985, Ser. No. 761,058

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1984, 3428733

Int. Cl.⁴ B23P *11/00*

U.S. Cl. 29—432 **7 Claims**



1. Method of producing a drive shaft with drive elements on a cylindrical basic part, which comprises forming peripheral driving surfaces for a drive element on pairs of discs, forming circular holes in the discs of each pair of substantially the same diameter as the cylindrical basic part and having axes being inclined relative to the surfaces of the discs and having inclinations being opposite to and mirror images of each other, pushing the discs onto a cylindrical basic part with the discs of each pair being congruent to each other with the holes in the discs concentric with the outer surface of the cylindrical part and having the inclinations opposite to and mirror images of each other, and pressing the discs of each pair together until they are substantially perpendicular to the longitudinal axis of the basic part and dig into the outer surface thereof.

6. Method of producing a drive shaft with drive elements on a cylindrical basic part, which comprises forming a pair of discs, forming circular holes in the discs of the pair of substantially the same diameter as the cylindrical basic part and having axes being inclined relative to the surfaces of the discs and having inclinations being opposite to and mirror images of each other, loosely pushing at least one other part having a peripheral driving surface over a cylindrical basic part, pushing the discs onto the cylindrical basic part enclosing the other part with the discs of the pair being congruent to each other with the holes in the discs concentric with the outer surface of the cylindrical part and having the inclinations opposite to and mirror images of each other, and pressing the discs of the pair toward each other until they are substantially perpendicular to the longitudinal axis of the basic part and dig into the outer surface thereof.

4,620,357

METHOD FOR ASSEMBLING A SAFETY BELT ROLL-UP DEVICE, ESPECIALLY FOR PROTECTING PERSONS IN MOTOR VEHICLES

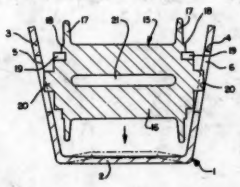
Artur Föhl, Schorndorf, Fed. Rep. of Germany, assignor to TRW REPA Feinstanzwerk GmbH, Alfdorf, Fed. Rep. of Germany

Division of Ser. No. 545,058, Oct. 25, 1983, Pat. No. 4,549,705. This application Jul. 24, 1985, Ser. No. 758,526

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1982, 3239584

Int. Cl.[4] B23P *11/00*

U.S. Cl. 29—439 3 Claims



1. Method for the manufacture of a safety belt roll-up device comprising a housing and an one-piece belt carrier, said housing having a base plate with two side walls extending from the base plate, and an opening in each side wall through which a free end of the one-piece belt carrier extends said one-piece belt carrier incorporating in a single piece a belt shaft and a belt reel with a reel flange at each end of the belt reel, said belt reel flange having a diameter greater than the diameter of said opening in the side wall, said method comprising the steps of inserting the one-piece belt carrier between the side walls of the housing which are bent apart in V-shape to permit ready insertion of the one-piece belt carrier between the side walls, maintaining the one-piece belt carrier at the height of the openings in the side wall, and moving the side walls together into a position parallel to each other to cause the free ends of the one-piece belt carrier to extend through the openings in the side walls and the one-piece belt carrier to be retained within the side walls.

4,620,358

METHOD OF SECURING EQUIPMENT PARTS TO A TRACKWAY SUPPORTING STRUCTURE

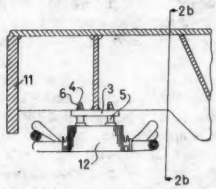
Luitpold Miller, and Hans G. Raschbichler, both of Ottobrunn, Fed. Rep. of Germany, assignors to Thyssen Industrie AG, Fed. Rep. of Germany

Filed Feb. 5, 1985, Ser. No. 698,351

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1984, 3404061

Int. Cl.[4] B23Q *3/00*

U.S. Cl. 29—464 6 Claims



1. A method of securing equipment parts in accurate positions at predetermined locations of connection to an elevated suspension structure supporting a track following system of transportation, particularly a magnetic suspension railroad, comprising providing mounting bodies for the supporting structure at locations of attachment and dimensioned for transferring to the supporting structure force and torques which act through a vehicle, connecting the mounting bodies at the desired attitude to the supporting structure in accordance with the layout of the track as referred to working surfaces of the parts of equipment, providing the mounting bodies after they are connected to the supporting structure with a plurality of thruholes and countersinks by drilling in a number needed for mounting the equipment part corresponding to the respective bolts and bores thereof and having the exact dimensions in all coordinates, laying out a plurality of additional elevated suspension supporting structures to form a layout of the track, repeating the above steps for connecting at least some of the mounting bodies to each of the plurality of additional elevated supporting structures and providing the thruholes and countersinks in said at least some of the connected mounting bodies and securing equipment parts to the mounting bodies using exact dimensioned bolts received in the holes drilled therein.

4,620,359

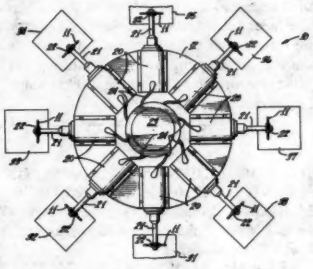
APPARATUS FOR MANUFACTURING RIGID COMPUTER MEMORY DISC SUBSTRATES

Richard J. Charlton, S. Laguna; Leland R. Krueger, Costa Mesa; Richard M. Noling, Irvine; Jimmy G. Saunders, El Toro, and Richard J. Elliott, Costa Mesa, all of Calif., assignors to Charlton Associates, Irvine, Calif.

Filed Nov. 14, 1983, Ser. No. 551,254

Int. Cl.[4] B23P *13/04*

U.S. Cl. 29—557 8 Claims



1. A method of manufacturing rigid computer memory disc substrates comprising the steps of:

providing a circular base plate;

mounting said base plate horizontally for rotation about a vertical axis;

rotatably mounting a plurality of spindles on said base plate, said spindles extending radially outwardly therefrom, in equally spaced relationship therearound;

mounting a rigid disc on the outwardly extending end of each of said spindles;

rotating each of said spindles;

providing a plurality of work stations around said circular base plate for performing work operations on said discs; and

rotating said base plate so as to convey each of said discs consecutively to each of said work stations; and

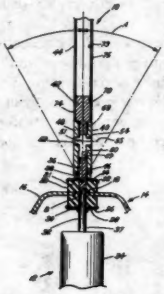
automatically sensing and measuring at one work station the results of the operations of prior work stations on each of said discs and automatically making adjustments to said prior work stations as a result of said measurements made on said discs to maintain said prior work stations within predetermined tolerances for subsequent discs.

4,620,360

SHOCK ABSORBER REMOVING TOOL

Gary D. Morris, Klamath Falls, Oreg., assignor to Lisle Corporation, Clarinda, Iowa

Filed Dec. 24, 1984, Ser. No. 685,468
Int. Cl.[4] B23D *29/02*
U.S. Cl. 29—566.1 8 Claims



1. A tool for fracturing the stem of a shock absorber to permit removal of the stem from an associated mounting bracket for the stem, the stem having a threaded stem end fastened to a mounting bracket and extending from means for retaining the shock stem in the mounting bracket, the tool comprising in combination:

(a) coupling means for rigid attachment to the stem end, said coupling means having a first threaded coupling end threadably connectable to the stem end, a second threaded coupling end, and a third threading coupling portion;

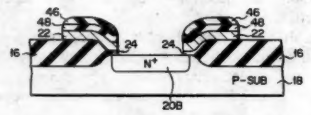
(b) handle means removably attachable to, alternatively, the second threaded coupling end or third threaded coupling portion on the coupling means to thereby define a lever arm whereby force may be applied to the handle means to bend and fracture the stem.

4,620,361

METHOD FOR PRODUCING A SEMICONDUCTOR DEVICE WITH A FLOATING GATE

Naohiro Matsukawa, Kamakura; Hiroshi Nozawa, Yokohama, and Shigeru Morita, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Japan

Filed May 17, 1985, Ser. No. 735,059
Claims priority, application Japan, May 17, 1984, 59-99233
Int. Cl.[4] H01L *21/76*
U.S. Cl. 29—571 6 Claims



1. A method for producing a floating gate type MOS transistor, which comprises:

a first step of forming a semiconductor structure covering a part of an element area of a semiconductor substrate, said structure including a first gate insulation layer on said element area, a floating gate on said first gate insulation layer, and a nitride pattern layer on said floating gate;

a second step of forming source and drain regions in said element area;

a third step of forming a protective layer covering the exposed portion of said element area by oxidizing the substrate using the nitride pattern as a mask;

a fourth step of removing said nitride pattern layer from the floating gate after the third step;

a fifth step of forming a second gate insulation layer on the floating gate; and

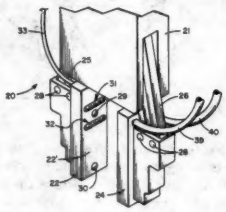
a sixth step of forming a control gate on said second gate insulation layer.

4,620,362

CHANGEABLE TOOLING SYSTEM FOR ROBOT END-EFFECTOR

Gregory E. Reynolds, King County, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jun. 22, 1984, Ser. No. 623,777
Int. Cl.[4] B23Q *3/155*
U.S. Cl. 29—568 17 Claims



1. An end-effector for use with robotic tool manipulators and characterized by its ability to acquire, align, grip, and manipulate any selected one of a plurality of different tools, each having its own unique requirements in terms of utilities and utility control lines necesssary for proper operation thereof, and wherein each different tool incorporates a tool identification device which uniquely identifies that particular tool; said end-effector comprising, in combination:

(a) a pair of opposable, vise-like gripper fingers each having an inwardly presented tool-engaging face, said fingers being mounted on said end-effector with freedom for controlled movement towards and away from one another;

(b) at least one first fluid connector port formed in said tool-engaging face of one of said fingers and positioned thereon for interengagement with any second fluid connector port formed on a finger-engaging face of each of the tools, each said first fluid connecting ports communicating with a fluid line extending through said finger and adapted to be connected to a fluid utility source;

(c) first electrical contact means formed in said tool-engaging face of one of said fingers and positioned thereon for interengagement with any second electrical contact means formed on a finger-engaging face of each of the tools;

(d) at least one electrical control line coupled to said first electrical contact means and extending through said finger and adapted to be coupled to an electrical utility source;

(e) tool identification means associated with said robotic manipulator;

(f) means formed in said tool-engaging face of one of said fingers for sensing the tool identification device incorporated in each different tool when gripped by said fingers, said sensing means adapted to be connected to said tool identification means associated with the robotic tool manipulator for defining and rendering operative only those particular utilities and utility control lines required to operate the particular tool gripped between said fingers;

(g) first alignment means formed in at least one tool engaging face of at least one of said fingers and adapted to interengage with second alignment means formed on a finger engaging face of each tool for properly aligning the tool with respect to said fingers when gripped thereby and for precluding registration of said first fluid-connector port(s), said first electrical contact means, and said sensing means

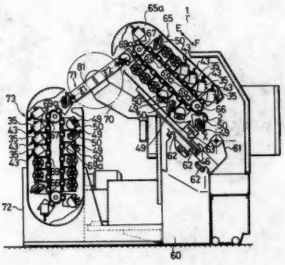
with any second fluid connecting port(s), any second electrical contact means and said tool identification device when the tool is improperly aligned with respect to said fingers; and,

(h) said first fluid connector port(s), first electrical contact means, sensing means and first aligning means being located on said tool engaging faces of said pair of fingers at fixed generic locations corresponding to preselected generic locations for any required second fluid connector port(s) and/or second electrical contact means, the tool identification device, and the second tool alignment means formed on the finger-engaging faces of each of the tools so that when any given tool is acquired, aligned and gripped between said end-effector fingers and said first and second alignment means are properly interengaged, registration of said tool sensing means and the tool identification device formed in the particular gripped tool results in generation of a signal identifying the particular tool gripped which serves to define and enable the particular utility(ies) and utility control line(s) required for operation of that tool.

4,620,363
COMPOSITE MACHINING LATHE

Yukio Mitsukuchi, Konan, and Sakae Hatano, Aichi, both of Japan, assignors to Yamazoki Machinery Works, Ltd., Aichi, Japan

Filed Oct. 26, 1984, Ser. No. 665,347
Claims priority, application Japan, Oct. 28, 1983, 58-203412; Nov. 25, 1983, 58-221863
Int. Cl.[4] B23Q *3/155*
U.S. Cl. 29—568 **6 Claims**



1. A composite machining lathe comprising:

a spindle;

a tool magazine;

a tool holder base movable in the direction of an axis of the spindle;

a continuous elongated flexible tool carrier, in said tool magazine, adapted to run along a path having a curved section;

a plurality of tools carried by said tool carrier in such a manner that the shanks of each said tools are located outside of said tool carrier and said shanks on the portion of said tool carrier in said curved section of said path are selectively engageable with a head bore formed in said tool holder base;

means for mounting said tool magazine such that said tool magazine is movable together with said tool holder base in synchronism in the direction of axis of said spindle and in the direction perpendicular to said spindle axis;

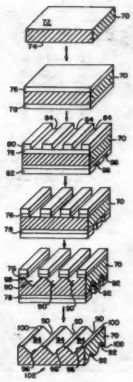
means for mounting said tool holder base in such a manner that said tool holder base is movable to and from a retracted position relative to said tool magazine; and

tool holding means, provided on said tool holder base, for holding the tools on said tool carrier by said shanks.

4,620,364
METHOD OF MAKING A CROSS-GROOVED SOLAR CELL

Geoffrey A. Landis, Providence, R.I., assignor to Spire Corporation, Bedford, Mass.

Division of Ser. No. 619,225, Jun. 11, 1984. This application Nov. 13, 1985, Ser. No. 797,600
Int. Cl.[4] H01L *31/18*
U.S. Cl. 29—572 **3 Claims**



1. A process of making a solar cell comprising:

(a) providing a thin semi-conductor wafer having two flat opposed surfaces;

(b) providing an etch resistant oxide layer on both of said two flat opposed surfaces;

(c) applying a photoresist layer on each of said oxide layers, said photoresist layers being formed with a plurality of spaced parallel slots, the direction of said plurality of slots on one of said two flat opposed surfaces being at an angle with respect to the direction of said plurality of slots on the second one of said two flat opposed surfaces;

(d) removing portions of said etch resistant oxide layers along said plurality of spaced parallel slots so as to expose portions of said two flat opposed surfaces of said thin semi-conductor wafer;

(e) etching said exposed portions of said two flat opposed surfaces of said thin semi-conductor wafer, so as to produce a plurality of grooves in said surfaces;

(f) removing all remnants of said photoresist and etch resistant oxide layers from both of said two flat opposed surfaces of said thin semi-conductor wafer; and

(g) providing a junction and metallization by conventional techniques to said wafer;

(h) said thin semi-conductor wafer being a (100) oriented single crystal silicon wafer, and said plurality of spaced parallel slots being directed along the (110) crystallographic axes of said single crystal silicon wafer;

(i) the spacing between said plurality of spaced parallel slots being smaller than the thickness of said thin semi-conductor wafer;

(j) said plurality of grooves being V-shaped in right cross section, having an angle greater than about 30° but not greater than about 120°.

4,620,365

METHOD OF MAKING A THIN-FILM STRAIN GAUGE

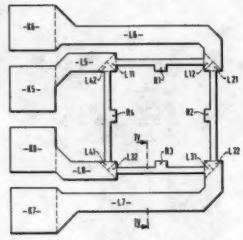
Kurt Burger, Friolzheim, and Heiko Gruner, Gerlingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

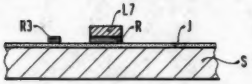
Division of Ser. No. 420,258, Sep. 17, 1982, Pat. No. 4,522,067. This application Feb. 8, 1985, Ser. No. 699,819

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1981, 3113745; PCT Int'l Appl., Dec. 18, 1981, PCT/DE81/00228

Int. Cl.[4] H01C *17/12*; G01L *1/22*

U.S. Cl. 29—610 SG **8 Claims**





1. A method of making a temperature-compensated thin-film strain gauge, comprising, the steps of:

providing a metallic spring element (S); depositing onto said spring element (S) a layer of glass insulation (I);

applying, by means of at least one of vapor deposition and sputtering, onto said spring element (S) a first layer of resistance material and a second layer of resistance material which is different from the material of the first layer but which has a temperature coefficient of resistance of the same order of magnitude as that of the material of the first layer;

etching, in a first etching step, an overall structure of resistance (R1–R4) and conduction (L11–L42, L5–8) regions; and

selectively removing, in a second etching step, the material (L) of said second layer overlying said resistance regions (R1–R4).

4,620,366

AUTOMATIC PIN EXTRACTION APPARATUS FOR INTEGRATED CIRCUIT TUBE

Ooi T. Koon, Selangor, Malaysia, assignor to RCA Corporation, Princeton, N.J.

Filed Jul. 17, 1985, Ser. No. 755,915

Int. Cl.[4] B23P *19/00*

U.S. Cl. 29—762 **6 Claims**

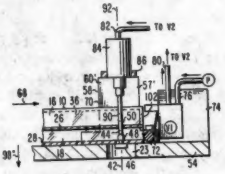
1. Automatic pin extraction apparatus for removing a pin from an elongated U-shaped cross-section tube, said pin including an enlarged bulbous shaft portion for interlocking said pin with a wall of said tube, said apparatus comprising:

guide means for aligning said tube and pin in a given reference position;

pin ejection means including sense means coupled to the guide means for sensing the presence of said aligned tube and pin, and fluid operated means coupled to the sense means for automatically ejecting the pin from said tube in response to the sensed aligned tube and pin; and

means adapted to receive fluid from a source of pressurized fluid;

said sense means including means for generating a pluse of



said received pressurized fluid in response to the sensed alignment of said tube at said reference position, said fluid operated means including actuating means responsive to said pluse applied as an input thereto for ejecting said pin.

4,620,367

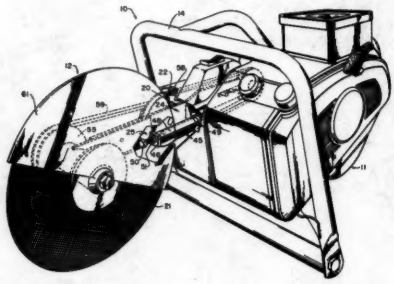
SAW DRIVE TENSIONER

William W. Tubesing, deceased, late of Stone Mountain, and by Charlotte M. Tubesing, executrix, 1097 Sharonton Way, Stone Mountain, both of Ga. 30083

Filed Mar. 11, 1985, Ser. No. 710,393

Int. Cl.[4] B27B *9/00*; B24B *23/02*; B28D *1/04*

U.S. Cl. 30—122 **8 Claims**



1. A saw construction including:

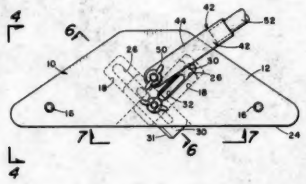
a prime mover having a rotary output member about a first axis thereon;

a circular cutting blade;

support means for rotatably mounting said cutting blade on said prime mover about a second axis spaced from said first axis including a first support member movably mounted on said prime mover for movement along a prescribed adjustment path and a second support member movably mounted on said first support member for movement along said prescribed adjustment path, said second support member mounting said cutting blade thereon; drive means drivingly connecting said output member with said cutting blade to rotate same, said drive means including an intermediate transfer member mounted on said first support member for movement therewith, a first flexible endless drive member drivingly connecting said output member to said transfer member, and a second flexible endless drive member drivingly connecting said transfer member to said cutting blade; and

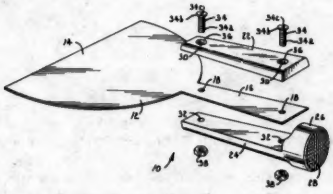
tensioning means for simultaneously adjusting the tension in both said first and second endless drive members by moving said second support member with respect to said prime mover so that said second endless drive member moves said transfer member and said first support member to simultaneously tension both said first and second endless drive members.

4,620,368
CARPET CUTTING TOOL
Terry R. Bowman, 4524 S. Union, Tulsa, Okla. 74107
Filed Jan. 7, 1985, Ser. No. 689,311
Int. Cl.[4] B26B *29/00*
U.S. Cl. 30—294 **5 Claims**



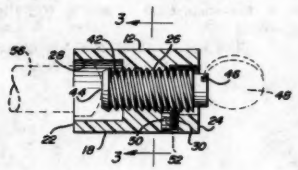
1. A carpet cutting tool for removal of installed carpet from a floor surface, the tool comprising a pair of substantially identical plates secured together in planar abutting relation, each plate being provided with recess means for slidbly receiving an independent cutting blade means therein, independent cutting blade means for each plate, means for slidably securing the cutting blade means in the respective recess whereby a selected cutting edge of a blade may be exposed for accomplishing a cutting operation, and elongated handle means pivotally secured to the plates whereby the plates may be moved over the surface of the carpet for cutting thereof while an operator of the tool remains in a substantially upright position.

4,620,369
DRYWALL KNIFE
Richard H. Gercken, 817 Park La., Liberty, Mo. 64068
Filed Aug. 9, 1984, Ser. No. 639,210
Int. Cl.[4] B26B *1/00*
U.S. Cl. 30—329 **7 Claims**



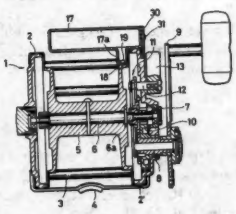
1. A drywall knife comprising:
a replaceable drywall knife blade having a flat main body adapted to apply and smooth drywall compound and a shank extending from said body, said body and shank occupying a common plane and said shank having an end remote from said body;
first and second handle portions sandwiching said shank therebetween and cooperating to form a handle having a butt end and an opposite end from which said main body of the blade projects;
a hammer head forming an integral part of said first handle portion, said hammer head being located on the butt end of said handle and presenting a hammer face which faces away from said main body of the blade, said remote end of the shank butting against said hammer head and said second handle portion having an end butting against said hammer head at a location adjacent said remote end of the shank;
a plurality of bolts extending through said handle portions and shank, each bolt having a threaded shaft and an enlarged head;
a nut applied to the shaft of each bolt to secure said handle portions together with said shank sandwiched therebetween to connect said blade with said handle, said nuts being detachable from said bolts to permit removal of the bolts and separation of said handle portions from said shank for replacement of the blade; and
means for recessing said nuts and bolt heads into said first and second handle positions.

4,620,370
CUE TIP TRIMMER
Michael Zownir, 418 Monroe St., NE., Albuquerque, N. Mex. 87108, and Myron Zownir, 21-15 34th Ave., Long Island City, N.Y. 11106
Filed Apr. 17, 1985, Ser. No. 724,301
Int. Cl.[4] B27L *9/00*
U.S. Cl. 30—494 **5 Claims**



1. A cue tip trimmer for trimming the outer periphery of the tip of a cue stick to a generally cylindrical contour substantially co-extensive with the cylindrical outer surface of the cue stick ferrule upon which said tip is mounted, said trimmer including a support body defining an end wise outwarding opening bore for loosely and rotatably receiving a cue stick ferrule mounted cue tip therein, said support body mounting a trimming blade therefrom having a single substantially straight and sharpened edge portion, only, projecting slightly into said bore along a short chord plane thereof, abutment means carried by said body defining an inner limit of movement of said tip into said bore and supported from said body for adjustable shifting relative thereto along said bore, said bore comprising a smooth outer generally cylindrical counter bore portion of a threaded bore formed through said support body and said abutment means comprising a threaded abutment member threaded in said bore and projecting into the inner end of said counter bore.

4,620,371
WATER-DEPTH MEASURING APPARATUS FOR A DOUBLE BEARING TYPE FISHING REEL
Hideo Murakami, and Haruo Uetsuki, both of Hiroshima, Japan, assignors to Ryobi Ltd., Hiroshima, Japan
Filed Jan. 25, 1984, Ser. No. 573,652
Claims priority, application Japan, Jan. 26, 1983, 58-10440[U]
Int. Cl.[4] G01B *3/12, 7/02;* **A01K** *97/00*
U.S. Cl. 33—129 **14 Claims**



1. A water-depth measuring apparatus for a fishing reel including a reel body in which a spool carrying a fishing line is rotatably supported, the apparatus comprising:

a detectable element removably mounted on said sppol for rotation therewith; and

a detachable cast-length calculator attachable to the reel, the cast-length calculator comprising:

means for detecting a number of rotations and a speed of rotation of said detectable element on said spool;

means for entering and storing reel and line information;

means for calculating the cast length of the fishing line from said speed of rotation of said detectable element and said reel and line information; and

display means for indicating when said cast length has reached a predetermined length.

4,620,372

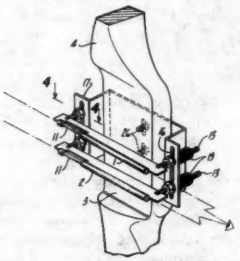
SIGHT SYSTEM FOR ARCHERY

George W. Goodrich, 5123 N. Kellen Ct., Bloomfield Hills, Mich. 48013

Filed Feb. 27, 1985, Ser. No. 706,088

Int. Cl.[4] F41G *1/46, 1/32*

U.S. Cl. 33—265 **10 Claims**



1. A sight system for an archery bow, the sight system having a vertical array of independantly adjustable sighting elements disposed in the sight window of the archery bow, wherein the improvement comprises:

at least one of the sighting elements being a refractive sight having a viewed end, the area within the outline of said viewed end being less than the end-on area of the shaft of a a typical archery arrow, said viewed end providing a window of view on a substantially parallax-free fiducial reference appearing to reside therein;

first adjustment means acting between the archery bow and said refractive sight for preselectably adjusting the position of said viewed end of said refractive sight in the sight window of the archery bow in the vertical direction;

second adjustment means acting between said archery bow and said refractive sight for preselectably adjusting the position of said viewed end of said refractive sight in the sight window of the archery bow in the lateral direction;

third adjustment means for preselectably adjusting the position of said parallax-free fiducial reference in the vertical direction in said window of view of said refractive sight; and

fourth adjustment means fornpreselectably adjusting the position of said parallax-free fiducial reference in the lateral direction in said window of view of said refractive sight.

4,620,373

DRY KILN AND METHOD

Donald R. Laskowski, 2346 Fisher Ave., Indianapolis, Ind. 46224, and Daniel R. Tekulve, R.R. #3, Batesville, Ind. 46006

Filed Jul. 23, 1984, Ser. No. 633,712

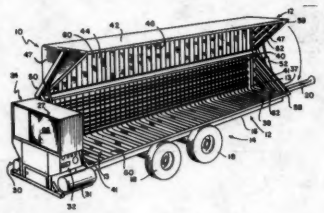
Int. Cl.[4] F26B *5/04, 13/30*

U.S. Cl. 34—16.5 **21 Claims**

1. A process for accelerating the drying of a wood piece having an exterior surface comprising the steps of

heating the wood piece in a chamber to a selected temperature,

reducing the pressure in the chamber to a pressure at least as low as the vapor pressure of water at the selected temperature and



further heating the wood piece by conduction with a flexible heating means which conformably engages the surface of the wood piece while maintaining a reduced pressure in the chamber, the heating means being sufficiently flexible for remaining in contact with the surface of the wood piece substantially throughout the drying process.

4,620,374

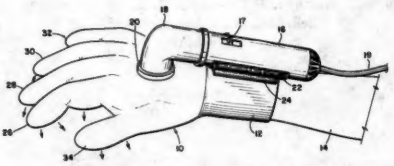
HAIRSTYLIST GLOVE

Dennis E. Patterson, Rte. 2, Box 232, Catoosa, Okla. 74015

Filed Sep. 17, 1985, Ser. No. 777,077

Int. Cl.[4] A45D *20/04*

U.S. Cl. 34—97 **9 Claims**



1. A hair working glove comprising:

an inner glove shell made of an essentially air impermeable flexible material;

an outer glove shell made of an essentially air impermeable flexible material placed over said inner glove shell forming a space therebetween, there being holes on the palm side of said outer glove shell;

warm air supply means for supplying air to said space between said inner and outer glove shells so that the warm air may be forced out said holes.

4,620,375

SNOWSHOE BINDING AND ICE CRAMPON OR THE LIKE

Robert E. Wallace, 12881 Foothill La., Saratoga, Calif. 95070

Filed Jul. 2, 1984, Ser. No. 627,316

Int. Cl.[4] A43C *15/06;* **A63C** *13/00;* **A63B** *29/00*

U.S. Cl. 36—7.6 **12 Claims**

1. Apparatus for attachment to a shoe, a boot, or the like of various sizes, said apparatus comprising:

foot plate means for receiving the sole portion of the boot, said foot plate means including:

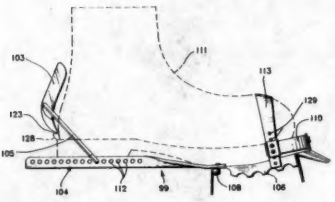
a toe portion for receiving the toe portion of the boot; and

a heel portion defining a substantially flat channel for receiving the heel portion of the boot, said heel portion having two sides, and front and tail ends, said heel portion along its front end being couplable with the toe portion, said tail end being in the same plane as said substantially flat channel, and at least a portion of each

of said two sides extending upward parallel to each other to form side rail means along each side of the substantially flat channel thereof and defining a plurality of uniformly sized holes therein;

a non-metallic resilient arcuate strip affixed to and extending substantially vertically up from the forward edge of the toe portion of the foot plate means to limit forward and lateral displacement of the toe of the boot;

a non-metallic resilient loop affixed to the toe end of the toe portion of the foot plate means disposed to extended



around the toe end of the boot to restrain vertical displacement of the toe of the boot;

a substantially U shaped bail having each end removably captured within adjacent holes in each of the side rail means to provide adjustability for various boot types and sizes; and

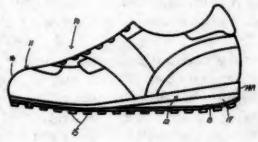
lever means mounted centrally on the bail and defining a mating edge for compressively mating with the rear portion of the boot to apply forward and downward pressure thereto to maintain the toe of the boot in contact with said non-metallic resilient strip.

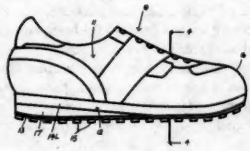
4,620,376

FOREFOOT VALGUS COMPENSATED FOOTWEAR

Louis C. Talarico, II, 116 Wood St., P.O. Box 180, Lewistown, Me. 04240-0180

Filed Jan. 22, 1985, Ser. No. 693,558
Int. Cl.[4] A43B *5/00, 13/38*
U.S. Cl. 36—103 **8 Claims**





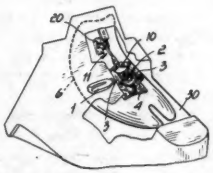
1. In an article of footwear having a forefoot valgus compensation, for use with a foot, said article having an upper portion and a sole, said sole having a forefoot and a rearfoot portion, said sole forefoot portion having a medial aspect and a lateral aspect, said sole forefoot portion being of varying thickness across the width thereof such that said sole slopes at an angle upwardly from said medial aspect to said lateral aspect to provide an inclined surface of greater thickness at said lateral aspect than at said medial aspect to compensate said forefoot in its valgus oriented angulation and to maintain normal alignment, position, motion and function of the entire foot during use of said article of footwear, and wherein said inclined surface compensates the forefoot beneath the medial aspect of the navicular bone, the internal (medial) cuneiform bone, the first metatarsal bone and the shafts of the lesser metatarsal bones diagonally, the metatarsal-phalangeal joints (the ball of the foot), and the toes giving the area beneath the fifth metatarsal-phalangeal joint (the little toe joint) the greatest elevation, and wherein said sole rearfoot portion is of constant thickness across the width thereof, such that the rear portion of the foot is allowed to act as an effective shock absorber when coming into contact with the ground, and wherein said inclined surface has a slope at a maximum angle of 8 degrees plus or minus amounts up to 6 degrees.

4,620,377

DEVICE FOR ACTUATING A FOOT INSTEP PRESSER PARTICULARLY IN SKI BOOTS

Adolfo Pozzebon, Istrana, Italy, assignor to Nordica S.p.A., Montebelluna, Italy

Filed May 23, 1985, Ser. No. 737,020
Claims priority, application Italy, May 29, 1984, 21153 A/84
Int. Cl.[4] A43B *5/04*
U.S. Cl. 36—119 **4 Claims**



1. In a ski boot with a longitudinal extension and having a shell portion delimiting an instep zone of the ski boot and in the interior of said ski boot a foot instep presser member below said shell portion,

a device for acting onto said foot instep presser member arranged between said shell portion and said presser memeber and comprising,

located at a first zone of said presser member a first mechanism expandable upon selected actuation between said shell portion and said presser member to press said presser member in a direction away from said shell portion towards the inside ofthe ski boot and,

located at at least another zone of said presser member at a longitudinal distance from said first zone and kinematically linked with said first mechanism at least another mechanism expandable, upon selected actuation of said first mechanism, between said shell portion and said presser member in a direction away from said shell portions towards the inside of the ski boot,

thereby to press upon selected actuation of said first mechanism said pressure member towards the inside of the ski boot by exerting a pressure action thereon in at least two zones of said pressure member longitudinally at a distance from each other and

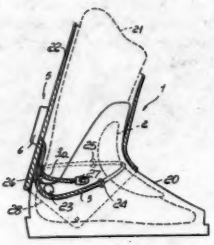
actuation means accessible from the outside for selectively actuating said first and said another mechanisms.

4,620,378

SKI BOOT INCORPORATING A FOOT SECURING DEVICE

Mariano Sartor, Montebelluna, Italy, assignor to Nordica S.p.A., Montebelluna, Italy

Filed May 23, 1985, Ser. No. 737,001
Claims priority, application Italy, May 30, 1984, 21967/84[U]
Int. Cl.[4] A43B 5/04
U.S. Cl. 36—119 7 Claims



1. In a ski boot having a shell with an instep zone defining instep portion and an inside heel zone defining heel portion opposite said instep portion and opposite side portions connecting said instep portion with said heel portion and with a presser element in the zone of and below said instep portion and adapted to receive therein a user's foot with liner means thereon,

a foot securing device comprising

first opening defining means in one of said opposite side portions at a distance from said heel portion,

second opening defining means in another of said opposite side portions at a distance from said heel portion,

cable tensioning means on said ski boot and cable anchoring means on said shell portion,

cable means including a first intermediate section thereof extending between said first and said second opening defining means overriding said presser element below said instep portion and slidably passing through said first and said second opening defining means,

said cable means having a second intermediate section extending from said first intermediate section beyond said first opening defining means towards said heel portion,

said cable means having moreover a first terminal section extending from said second intermediate section at said heel portion up to said cable tensioning means and in operative engagement therewith,

said cable means having further a third intermediate section extending from said first intermediate section thereof beyond said second opening means towards said heel portion

and a second terminal section extending from said third intermediate section around said inside heel zone and inwardly along at least part of said one side portion of said shell up to said cable anchoring means,

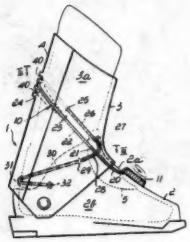
thereby to cause said cable means to form inwardly of said instep portion, said heel portion and said opposite side portions a loop formation surrounding with at least partially overlapping loop portions said user's foot with said liner means arranged at least between said cable means and the user's foot when the user's foot is received therein and to exert a securing action of said user's foot onto said shell at at least three spaced apart points when said tensioning means are actuated to tension said cable means and seucre said user's foot in cooperation with said first and second opening defining means and said anchoring means.

4,620,379

SKI BOOT, PARTICULARLY OF THE REAR ENTRANCE TYPE, INCORPORATING A CLOSURE AND FOOT SECURING DEVICE

Mariano Sartor, Montebelluna, Italy, assignor to Nordica S.p.A., Montebelluna, Italy

Filed Jun. 4, 1985, Ser. No. 741,062
Claims priority, application Italy, Jun. 13, 1984, 22279/84[U]
Int. Cl.[4] A43B 5/04, 11/00
U.S. Cl. 36—119 12 Claims



1. In a ski boot having a shell with an instep zone defining instep portion and an inside heel zone defining heel portion opposite said instep portion and opposite side portions connecting said instep portion with said heel portion, a front quarter hinged on said shell and having a pair of opposite lateral flap portions, said front quarter at least partially overlapping said instep portion and said opposite side portions and a rear quarter hinged on said shell and with a presser element in the zone of and below said instep portion and adapted to receive therein a user's foot with inner boot like means thereon,

a closure and foot securing device comprising: cable means,

first opening defining means in one of said opposite side portions at a distance from said heel portion for the passage of said cable means therethrough,

second opening defining means in one of said opposite lateral flap portions of said front quarter, said second opening defining means being arranged rearwardly at a distance from said first opening defining means for the passage of said cable means through said second opening defining means,

third opening defining means in another of said opposite lateral flap portions of said quarter for the passage therethrough of said cable means.

fourth opening defining means in another of said opposite side portions of said shell forwardly at a distance from said third opening defining means,

fifth opening defining means in said one side portion of said pair of opposite side portions of said shell for the passage of said cable means therethrough,

cable tensioning means on said ski boot and cable anchoring means on said shell portion,

said cable means including a first section thereof extending inside said shell from said cable tensioning means to said first opening defining means,

said cable tensioning means including a second section extending from said first section thereof through said first opening defining means outside said shell and inside with respect to one of said opposite lateral flap portions up to said second opening defining means,

said cable means including a third section thereof extending from said second section thereof through said second opening defining means to the outside of said one lateral flap portion of said front quarter and around said rear quarter up to said third opening defining means,

said cable means including a fourth section thereof extending from said third section thereof through said third opening defining means inside inside with respect to said another

lateral flap portion of said front quarter up to said fourth opening defining means,

said cable means including a fifth section extending from said fourth section thereof through said fourth opening defining means to the inside of said shell inwardly over said instep portion thereof and overriding said presser element below said instep portion and up to said fifth opening defining means,

said cable means having a sixth section extending from said fifth section through said fifth opening to the outside of said shell and inwardly of said one lateral flap portion and over said inside heel zone up to said cable anchoring means,

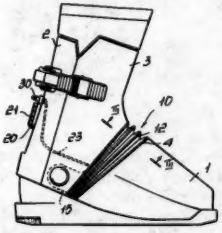
thereby to cause said cable means to form outwardly over said rear quarter a first loop formation overriding outwardly said rear quarter and to form a second loop formation extending inwardly of said instep portion over said presser element and around said heel zone, to exert in use on said user's foot a securing action at at least two spaced apart points and simultaneously a closing action on said rear quarter and said front quarter when said tensioning means are actuated to tension said cable means.

4,620,380

SKI BOOT INCORPORATING A FLEX CONTROL DEVICE

Giuseppe Aldinio, Treviso, Italy, assignor to Nordica S.p.A., Montebelluna, Italy

Filed Feb. 12, 1985, Ser. No. 701,045
Claims priority, application Italy, Feb. 28, 1984, 19833 A/84
Int. Cl.[4] A43B *5/04*
U.S. Cl. 36—121 **8 Claims**



1. A ski boot incorporating a flex contol device and comprising a shell, associated thereto for rocking movement about an axis substantially perpendicular to the shell longitudinal direction at least one quarter tiltable relative to said shell, said shell having at least one edge portion and said quarter having at least another edge portion, said one edge portion and said another edge portion facing each other at a variable distance depending on the relative position of the quarter and the shell with respect to each other,

a pressure fluid inflatable chamber member arranged between said one edge portion and said another edge portion and having one side portion thereof in abutment relationship with said one edge portion and having another side portion thereof in abutment relationship with said another edge portion and

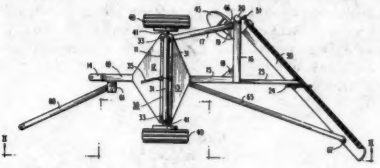
pumping means connected to said inflatable chamber member for setting a preestablished fluid pressure level within said inflatable chamber member to thereby control the elastic resistance against deformation of said chamber member and the degree of flex of the ski boot.

4,620,381

DITCHING MACHINE WITH OFFSET DRAFT VEHICLE

Gary M. Plyler, Georgetown, and Michael G. Tisdale, Andrews, both of S.C., assignors to Westvaco Corporation, New York, N.Y.

Filed Jun. 24, 1985, Ser. No. 747,578
Int. Cl.[4] E02F *5/02*
U.S. Cl. 37—98 **5 Claims**



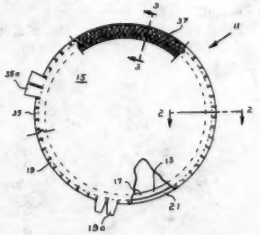
1. A ditching machine comprising primary frame structure supported by wheel suspension structure, said wheel suspension structure comprising a wheel support unit respective to laterally opposite sides of said frame structure, said wheel support units being rotational about a single common wheel axis extending transversely of said primary frame structure, vertical adjustment means secured between said frame structure and said wheel suspension structure for selectively adjusting a vertical position of said frame structure relative to said wheel axis, said primary frame structure including a primary draft bar extending forwardly of said wheel axis and tool mounting means behind said wheel axis, said tool mounting means comprising first bearing support means for securing a convex cutting disc rotationally about a disc axis and second bearing support for positionally securing one end of a scraper blade in draft position behind said cutting disc, said cutting disc and said one end of said scraper blade being positioned laterally of a longitudinal center axis of said machine passing substantially equidistantly between said wheel support units, and an auxiliary draft bar pivotally secured to said primary draft bar forward of said wheel axis for hitching to a draft vehicle at a draft point laterally offset from said machine longitudinal center axis opposite from said cutting disc whereby operationally dynamic turning moments about a central vertical axis between said wheel support units are balanced.

4,620,382

APPARATUS FOR TENSIONING A HELIOSTAT MEMBRANE

Daniel V. Sallis, P.O. Box 554, Littleton, Colo. 80120

Filed Jun. 6, 1984, Ser. No. 617,820
Int. Cl.[4] D06C *3/08*; F24J *3/02*
U.S. Cl. 38—102.2 **11 Claims**



1. Apparatus for tensioning a membrane, comprising:

(a) a support frame having a closed loop plan configuration, an outer peripheral surface and a coplanar upper surface,

(b) a bladder engaging and extending around said outer

peripheral frame surface and adapted for receiving a pressurizing fluid, and

(c) a membrane of a sheet material that is generally coplanar and extending across the opening defined by the loop of said frame and having its lower peripheral surface in engagement with said frame upper surface, the membrane periphery having means connected to it for passing around and embracing the outer surface of said bladder and affixed to a load bearing member in the region of the lower edge of said frame, whereby when said bladder is pressurized said connecting means is pushed radially outwardly and radial tensioning forces are induced in said membrane and radially compressive force is induced in said frame.

4,620,383

VISIBLE INDEX SYSTEMS

Alexander P. Janssen, c/o Datastrip Corporation, 1575 Avon St. Extended, Charlottesville, Va. 22901

Continuation-in-part of Ser. No. 350,618, Feb. 22, 1982, abandoned. This application Mar. 15, 1984, Ser. No. 589,687

Int. Cl.[4] B42F *21/00*

U.S. Cl. 40—360 **11 Claims**

7. A reinforced pocket card for a visible index system, comprising: a planar, generally rectangular card holder made from a laminate composed of a polymeric sheet material adhesively secured between two layers of paper, said card holder having at least one aperture adjacent a corner of said card holder, and said aperture having round or radius corners at the ends of said aperture to protect the laminate of which the card holder is made against tearing, hinges mounted at the upper edge of said card holder adjacent the corners thereof, each hinge comprising a main body portion and a barrel at the upper end of the main body for receiving a pocket card supporting hanger, said barrel equaling the main body portion of said hinge in length and the sides of the hinge being parallel from end-to-end thereof.

4,620,384

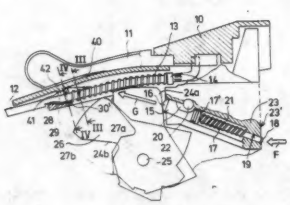
HAMMER LOCK FOR BREECH LOADING FIREARMS

Timo Hyytinen, Jyväskylä, Finland, assignor to Valmet Oy, Helsinki, Finland

Filed Jun. 1, 1984, Ser. No. 616,083

Int. Cl.[4] F41C *7/00, 19/18*

U.S. Cl. 42—41 **5 Claims**



1. In a bullet-bore firearm of foldable construction having a hammer for a striker in the breech, means for locking the firearm against folding including a movable locking member and a spindle engaged therewith, said spindle and urged in one direction by a spring engaged with the spindle and a fixed shoulder in the firearm to move the locking member into a locking position and moved in the opposite direction when the locking member is moved to an unlocking position, the combination comprising:

means for locking the hammer in engagement with the striker on firing of the firearm to prevent rearward movement of the striker by firing gas pressure resulting in accumulation of detonator material in front of the striker in the firing pin hole, including:

detent means engaged with the spring and the shoulder to automatically lock the hammer in engagement with the striker on firing of the firearm and engageable by the spindle to unlock the hammer for cocking on movement of the locking member to said unlocking position to permit folding of the firearm.

4,620,385

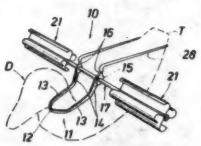
ROTATABLE WINGS FOR WATER FOWL DECOYS

Thomas G. Carranza, and Luis Carranza, both of 910 Globe, Houston, Tex. 77034

Filed Apr. 22, 1985, Ser. No. 725,896

Int. Cl.[4] A01M *31/06*

U.S. Cl. 43—3 **12 Claims**



1. Rotatable wings for water fowl decoys comprising;

a generally U-shaped bracket adapted to be carried by water fowl decoys and maintain the decoy in a balanced floating position when carried thereby,

an axle member secured transversly to said bracket with opposing ends extending laterally outward therefrom, and

a pair of wings slidably and rotatably received and secured on the extended ends of said axle member in laterally opposed relation and each having a series of circumferentially spaced radially extending blade members disposed above the surface of the water and shaped to cause rotation of said wings when subjected to a slight breeze,

said blade members adapted to produce an alternating visual signal upon rotation which is perceptable by live birds.

9. A water fowl decoy comprising;

a body formed of bouyant material and fashioned to resemble a water fowl,

said body adapted to receive a rotatable wing at opposing sides, and

a pair of wings rotatably received and secured on the opposing sides of said body and each having a series of circumferentially spaced radially extending blade members disposed completely above the surface of the water and shaped to cause rotation of said wings when subjected to a slight breeze,

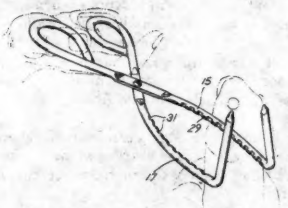
said blade members adapted to produce an alternating visual signal upon rotation which is perceptable by live birds.

4,620,386

METHOD AND APPARATUS FOR GRIPPING A FISH

Larry L. Hare, 13726 58th Ave., NE., Marysville, Wash. 98270

Filed Feb. 24, 1982, Ser. No. 352,035
Int. Cl.[4] A01K *97/00*
U.S. Cl. 43—4 **1 Claim**



1. A method of orienting a fish using a pair of tine members and a pair of jaw members comprising the steps of:

simultaneously inserting a pair of tine members into respective gills of a fish, said tine members entering the gills from outside the fish and at an acute angle relative to each other;

clamping the jaw members around the torso of the fish directly below the fish's gills and at an acute angle with respect to the path of insertion of said tine members; and

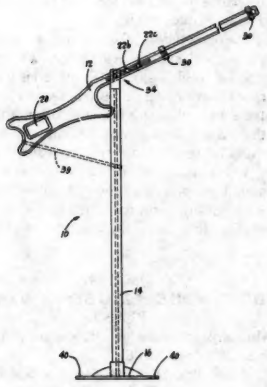
moving said tine members toward one another simultaneously with said step of clamping.

4,620,387

ICE FISHING APPARATUS

Ted E. Bloom, Warren, Ohio, assignor to Pacal Molded Plastics, Warren, Ohio

Filed May 22, 1985, Ser. No. 736,253
Int. Cl.[4] A01K *87/00*
U.S. Cl. 43—17 **10 Claims**



1. Ice fishing apparatus comprising:

an elongated plastic fishing pole supporting one or more eyelets for guiding a fishing line into an ice fishing hole, a reel having inwardly curved end surfaces spaced from each other for storing fishing line and further having inwardly curving top and bottom surfaces for gripping said reel, and a pivot defining trunnion member intermediate the eyelets and the reel, said trunnion member including cylindrical bosses extending from both sides of the pole;

a plastic stand for supporting the pole, said stand having a cavity at one end to define a bearing for said trunnion member, an interference fit between the stand and trunnion allowing rotation of the pole in response to a torque applied about the pivot; said interference fit further allowing the pole to be withdrawn from the stand by an upward force on the pole; and

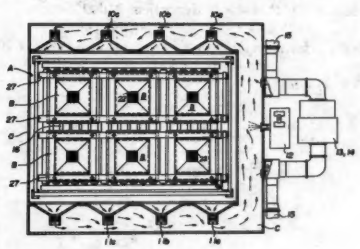
a plastic base member having a center slot to receive the stand and support the stand in an upright position on an ice surface.

4,620,388

INSECT KILLING SYSTEM

Masami Imagawa, Kagoshima, Japan, assignor to Sansyu Sangyo Kabushiki Kaisha, Kagoshima, Japan

Filed Sep. 4, 1984, Ser. No. 647,030
Claims priority, application Japan, Sep. 14, 1983, 58-171020
Int. Cl.[4] A01M *19/00*
U.S. Cl. 43—130 **4 Claims**



1. An insect killing system for killing insect pests such as orange flies and melon flies, comprising:

a circulation chamber in which steam is allowed to circulate;

a plurality of differential insect killing cells with each cell having an open upper top portion and an open bottom portion, in which said steam is forced to flow there through, said plurality of differential insect killing cells accommodating a large number of raw fruits with said insect pests attached thereto and being arranged within said circulation chamber;

first blower means for circulating said steam in said circulation chamber; and

second blower means for forcing said steam to flow through each of said plurality differential insect killing cells, whereby said steam is applied to each of said raw fruits and kills out said insect pests attached to said raw fruits.

4,620,389

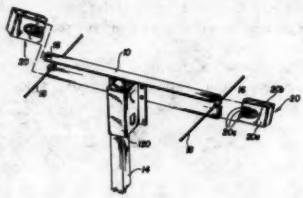
VINE TRELLIS ASSEMBLY

Don J. Coulson, Huntington Beach, Calif., assignor to North Star Company, Inc., Gardena, Calif.

Filed May 28, 1985, Ser. No. 738,278
Int. Cl.[4] A01G *17/06*
U.S. Cl. 47—46 **2 Claims**

1. A trellis assembly for supporting vines comprising: a stake, at least one tensioned trellis wire, a cross-arm attached to the stake and having a slot at at least one end for slidably receiving the trellis wire, and a clip mounted on said end of said cross-arm and engaging said trellis wire to inhibit sliding movement of said cross-arm along said wire, said clip embracing the end of said cross-arm and having a pair of spaced and parallel side members extending on either side of the cross-arm,

said side members having aligned slots therein extending inwardly from the respective ends thereof for receiving the



trellis wire, the edges of the slots of said side members of said clip being bent to form jaws which bite into said trellis wire.

4,620,390

METHOD AND APPARATUS FOR REORIENTING PLANT PRECURSORS DURING GROWTH

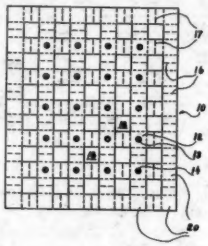
Dan Mekler, P.O.B. 1040, Jerusalem 91009, Israel

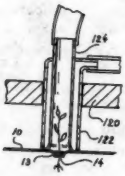
Filed Oct. 11, 1984, Ser. No. 659,946

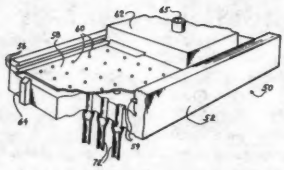
Claims priority, application Israel, Oct. 16, 1983, 69976

Int. Cl.[4] A01G *9/10*

U.S. Cl. 47—58 **18 Claims**







1. Apparatus for plant growth and development comprising:

a plant precursor development receptacle, means defining a plurality of plant development locations thereon, said receptacle including means whereby it can be oriented in at least two operative orientations wherein, in a first of said at least two operative orientations, the plant development locations are spaced from one another by a first distance, and, in a second of said at least two operative orientations, the plant development locations are spaced from one another by a second distance materially greater than said first distance;

distribution means for distributing a plant precursor to each of said plant development locations when said receptacle is oriented in said first operative orientation, which distribution means comprises an apertured sheet having apertures and means for communicating said apertures in one-to-one relation with said plant development locations when said receptacle is in said first operative orientation; and

means for removably blocking exit from said apertured sheet as plant precursors are distributed over said apertured sheet for filling each of the apertures therein with a single plant precursor.

9. Apparatus for plant growth and development comprising:

a plant precursor development receptacle, means defining a plurality of plant development locations thereon, said receptacle including means whereby it can be oriented in at least two operative orientations wherein, in a first of said at least two operative orientations, the plant development locations are spaced from one another by a first distance, and, in a second of said at least two operative orientations, the plant development locations are spaced from one another by a second distance materially greater than said first distance; and

means for disengaging said partially developed plants from said development locations and relocating them in different plant development locations apart from said receptacle when said receptacle is oriented in its second operative location, and wherein said disengaging means comprises apparatus for engaging said partially developed plants with a flow of pressurized gas.

12. A method of plant development comprising the steps of:

distributing plant precursors in a plant development receptacle associated with a first growth medium in a first spatial orientation,

producing partial plant development of said plant precursors in said first growth medium,

changing the orientation of said plant development receptacle to a second spatial orientation wherein the spacing between the resulting plants is materially increased, and

transferring the resulting plants from said plant development receptacle in said second spatial orientation to a second growth medium at locations therein which are in registration with the orientation of said resulting plants in said second spatial orientation, and wherein said transferring step includes applying a flow of pressurized gas to at least one said resulting plant for removing it from said receptacle and disposing it to said second growth medium.

4,620,391

METHOD OF PRODUCING SELF-INCOMPATIBLE PLANTS

David L. Mulcahy, and Gabriella B. Mulcahy, both of 14 Cosby Ave., Amherst, Mass. 01002

Filed Jun. 18, 1984, Ser. No. 621,443

Int. Cl.[4] A01G *1/00*

U.S. Cl. 47—58 **17 Claims**

1. A method of achieving self-incompatibility in plants, said method comprising:

(a) self-pollinating a highly heterozygous plant with sufficient pollen to set fruit but not result in pollen tube competition;

(b) planting the seed resulting from the self-pollination and measuring each plants' tendency toward self-incompatibility;

(c) self-pollinating those plants from step (b) exhibiting the highest degree of self-incompatibility;

(d) repeating steps (b) and (c) with seeds from step (c) until a fully self-incompatable line is achieved.

4,620,392

DOOR BEARING AND DOOR ASSEMBLY

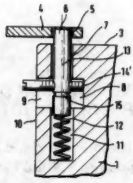
Werner Kerpers, Bingen, and Thomas Durstewitz, Fritzlar, both of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 27, 1984, Ser. No. 604,483

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1983, 3315346

Int. Cl.[4] E05D *7/02*

U.S. Cl. 49—382 **6 Claims**



1. In a door bearing and door assembly for pivotally mounting the door on a supporting structure of a household refrigeration appliance; said door bearing including a bearing arm for securement to said supporting structure; said bearing arm having a bearing bore; an elongated bearing pin; said door including an elongated passage slidably receiving said elongated bearing pin; said elongated bearing pin having an operative position in which said bearing pin extends into said bearing bore; the improvement wherein said door has a recess adjoining said elongated passage in a length dimension thereof, said recess having an end wall; said recess having a dimension parallel to said length dimension; said dimension of said recess being sufficiently large to accommodate portions of said bearing pin in a withdrawn position thereof in which said bearing pin is clear of said bearing bore; an outwardly open port in said door communicating with said recess and extending transversely to said length dimension; said open port providing access to said bearing pin for displacing said bearing pin into said withdrawn position; wherein spring means is provided for urging said bearing pin into said operative position; and wherein engageable means is provided on said bearing pin in the zone of said recess for permitting manual displacement of said bearing pin between said operative and withdrawn positions by access through said port, said engageable means including a screw which extends transversely through said bearing pin, which provides a handle projecting from said port, and which has an end that is adapted to press against said end wall of said recess to immobilize said bearing pin.

4,620,393

TURNABLE WINDOW ARRANGEMENT HAVING A STOP DEVICE FOR A PARTIALLY OPEN POSITION

Kare Stafset, Spjelkavik, Norway, assignor to Kva-Spil Ltd., Spjelkavik, Norway

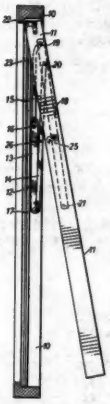
Filed Dec. 22, 1982, Ser. No. 452,070

Claims priority, application Norway, Jan. 11, 1982, 820055

Int. Cl.[4] E05C *17/00*

U.S. Cl. 49—394 **10 Claims**

1. Turnable window arrangement having a hinge for mounting a window on a frame, said hinge comprising two support members pivotable relative to each other about a common pivot axis and a manually releasable stop device having a locking element fixedly mounted on one of the support members and a self-locking catch element pivotally mounted on the other support member with a support means at one end for actuating said catch element, said locking member and said catch element being releasably engaged to permit unimpeded swinging of a window within a limited angle of rotation between closed and partially open positions of the window while on release permitting the window to swing beyond said angle of rotation about said pivot axis, said device incorporating a positive guide mechanism which when the window is within said limited angle of rotation forcibly guides said element into engagement with said locking element while permitting limited movement of said catch element relative to said locking element, said positive guide mechanism including guide members one of which is on said catch element while the other is formed by said locking element, said guide member on said catch element. being formed by an inner stop-forming end portion defining one end of a first guide groove in said catch element and said locking element being displaceable to a limited extent along said guide groove when said catch element is in said locking position.



4,620,394

DEVICE FOR SLIDE GRINDING

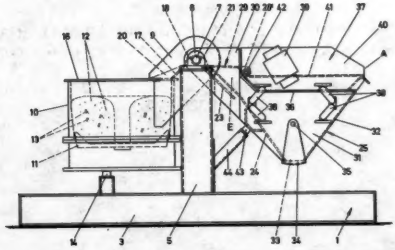
Karl Temme, Wuppertal, and Volker Mehnert, Gevelsberg, both of Fed. Rep. of Germany, assignors to Carl Kurt Walther GmbH & Co. KG, Wuppertal, Fed. Rep. of Germany

Filed May 2, 1985, Ser. No. 729,595

Claims priority, application Fed. Rep. of Germany, May 12, 1984, 3417749; Nov. 26, 1984, 3442996

Int. Cl.[4] B24B *19/00*

U.S. Cl. 51—163.2 **14 Claims**



1. In an apparatus for slide grinding having a slide-grinding container which is movable upwardly in a tilting movement from a slide-grinding position thereof around a horizontal tilt axis into an emptying position thereof above a screen which is adapted to be placed in vibration and is arranged in an upper region of a collection container which is tiltable in a direction

opposite the tilting movement of the slide-grinding container into an emptying position of the collection container above the slide-grinding container, and a collection chamber of the collection container arranged below the screen having a first chute which terminates above the slide-grinding container in the emptying position of the collection chamber, the chute defining an emptying opening for returning abrasive bodies which have fallen through the screen into the slide-grinding container, the improvement wherein

said collection container and said slide-grinding container are tiltable independently of each other,

said screen is formed as a screen chute, and

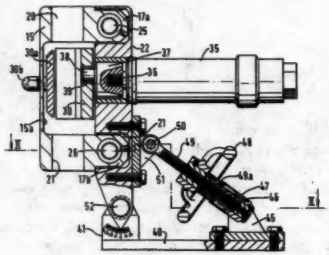
means for vibrating said screen chute relative to said collection container.

4,620,395

VALVE GRINDING APPARATUS

Peter R. French, London, and Roger Boore, Ewell, both of England, assignors to Valveserve Machines Limited, London, England

Filed Jun. 22, 1984, Ser. No. 623,565
Int. Cl.[4] B24B *15/02*
U.S. Cl. 51—241 VS **11 Claims**



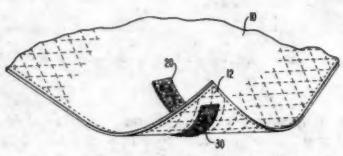
1. Apparatus for grinding valve seats and like surfaces comprising a grinding head rotatably mounted on a supporting arm, drive means for rotating said grinding head also mounted on said supporting arm and a support structure carrying said supporting arm on slide means providing freedom of movement of said arm in two orthogonal directions in a plane substantially parallel to the plane of rotation of said grinding head, said support structure including drive means for imparting a cyclic motion to said supporting arm which motion is in said plane substantially parallel to the plane of rotation of said grinding head and has components in said two orthogonal directions.

4,620,396

PROTECTIVE COVER OF FLEXIBLE SHEET MATERIAL

Kris E. Bjorntwedt, 647 S.W. Veronica Ave., Port Saint Lucy, Fla. 33453

Filed May 2, 1985, Ser. No. 729,752
Int. Cl.[4] B32B *3/06*
U.S. Cl. 52—3 **3 Claims**



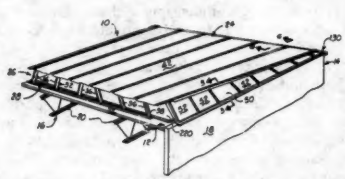
1. A shipping pad for use in the moving industry comprising a rectangular flexible sheet of a size to wrap around an article and thickness sufficient to protect said article against marring and superficial damage during handling, transport and storage, a first strip of "Velcro" diagonally fixed to each corner on one side of said sheet, a second strip of "Velcro" diagonally fixed to each corner on the opposite side of said sheet, each of said second strips substantially overlying one of said first strips to define pairs of substantially back-to-back strips on opposite sides of each corner of said sheet, all of the strips on one side of said sheet being of the female variety and all the strips on the other side of said sheet being of the male variety.

4,620,397

ROOF SYSTEM POSITIONABLE OVER AN EXISTING ROOF STRUCTURE AND METHOD FOR INSTALLING SAME

Harold G. Simpson, Oklahoma City, and Leo E. Neyer, Edmond, both of Okla., assignors to Harold Simpson, Inc., Oklahoma City, Okla.

Division of Ser. No. 487,614, Apr. 22, 1983, Pat. No. 4,520,610, and a continuation-in-part of Ser. No. 503,299, Jun. 10, 1983, Pat. No. 4,534,148, and a continuation-in-part of Ser. No. 428,568, Sep. 30, 1982, and a continuation-in-part of Ser. No. 306,662, Sep. 29, 1981, Pat. No. 4,524,544, and a continuation-in-part of Ser. No. 121,920, Feb. 15, 1980, Pat. No. 4,361,993, and a continuation-in-part of Ser. No. 93,173, Nov. 13, 1979, Pat. No. 4,329,823. This application Apr. 22, 1985, Ser. No. 713,319
Int. Cl.[4] E04B *1/346*
U.S. Cl. 52—66 **18 Claims**



1. A roof system positionable over an existing roof, the roof system formed of at least one roof section, the roof section of the roof system comprising:

a plurality of adjustable trusses disposed along a preselected section of the existing roof, each of the trusses having a lower cord, a spatially disposed upper cord and an adjustable web assembly interconnecting the lower cord and the upper cord, the lower cord of each truss disposed substantially adjacent the existing roof such that the trusses extend upwardly from the existing roof in a substantially parallel relationship with the adjacently disposed trusses, the web assembly of each of the trusses being adjustable such that the upper cord of each of the trusses is substantially horizontally disposed a selected predetermined height above the existing roof and independent of the slope of the existing roof and the position of the lower cord;

truss fastener means for connecting the lower cord of each of the trusses to the existing roof;

at least one roof panel member supported by the upper cords of the trusses, the roof panel member being disposed to substantially transverse the upper cords of the trusses; and

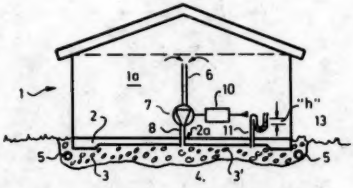
fastener means for connecting the roof panel member to the upper cords of the trusses to form the roof system having a predetermined roof plane substantially independent of the plane of the existing roof.

4,620,398

ARRANGEMENT IN BUILDING STRUCTURES INCORPORATING A FOUNDATION MAT, FOR CREATING A VOLUME OF AIR BENEATH THE MAT

Veikko Wallin, Sommarvägen 3., 175 40 Järfälla, Sweden

Filed Nov. 29, 1984, Ser. No. 676,302
Claims priority, application Sweden, Dec. 15, 1983, 8306971; May 29, 1984, 8402891
Int. Cl.[4] E02D *27/00*
U.S. Cl. 52—169.1 14 Claims



1. A building arrangement comprising:
a stratum of porous material;
a foundation mat supported by said stratum;
a building structure supported on said foundation mat; and
means for supplying air at a pressure above ambient pressure into said stratum so as to create an overpressure condition in said stratum whereby at least a portion of the supplied air escapes from said stratum to reduce water content in said stratum;
said means for supply air including a fan which is arranged to co-act with a speed regulator so that the fan is adapted to maintain a pre-determined amount of overpressure in said stratum, whereby the fan may be used effectively under differing ground conditions;
said fan receiving air from intake conduits arranged within the building structure, said fan supplying pressurized air through passages which extend through the foundation mat to air blow-out locations in said stratum.

4,620,399

ZEOLITE GRANULATE, PROCESS FOR ITS PRODUCTION AND USE

Hans Strack; Peter Kleinschmit, both of Hanau, and Ehrfried Parr, Rodenbach, all of Fed. Rep. of Germany, assignors to DeGussa AG, Frankfurt, Fed. Rep. of Germany

Division of Ser. No. 406,526, Aug. 9, 1982, Pat. No. 4,542,115. This application May 28, 1985, Ser. No. 738,260
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1981, 3132379
Int. Cl.[4] E06B *7/12*
U.S. Cl. 52—172 2 Claims

1. An insulating glass window comprising two spaced apart panes of glass having a filling of the zeolite granulates of zeolite Type NaA having the following parameters:

Adsorption Data: (p/po = 0.8, 20° C.)		
H_2O	>	22.0%
NH_3	>	11.0%
CO_2	≦	0.1%
O_2	≦	0.1%
N_2	≦	0.1%
Ar	≦	0.1%
CH_3OH	≦	0.2%
$CH_3—CH_2—OH$	≦	0.2%

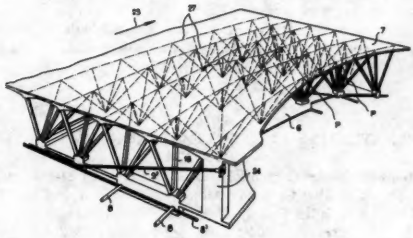
between the two panes of glass.

4,620,400

PRESTRESSED CONCRETE STRUCTURE, A METHOD OF PRODUCING THIS STRUCTURE, AND ELEMENTS FOR IMPLEMENTING THE METHOD

Pierre Richard, Neuilly S. Seine, France, assignor to Bouygues, France

Continuation of Ser. No. 324,015, Nov. 23, 1981. This application Sep. 25, 1984, Ser. No. 654,531
Claims priority, application France, Nov. 25, 1980, 80 24984
Int. Cl.[4] E04C *3/20*
U.S. Cl. 52—227 16 Claims



1. A prestressed concrete structure behaving like a hollowed out slab, comprising two reinforced or prestressed concrete slabs which are positioned opposite each other in generally parallel spaced relationship and which are connected by a lattice work of concrete bars positioned in and across the space between the slabs, the lattice work being mainly composed of a plurality of prefabricated concrete triangle elements, each triangle element comprising at least one group of at least two bars and at least one cross piece positioned generally along the three sides of a triangle, the meeting point of the two bars forming the apex of the triangle and being adjacent one of said slabs and the cross piece being parallel to and adjacent the other of said slabs, a plurality of cables for prestressing the whole of the structure, and at least two concrete cable anchor members which are spaced apart longitudinally and positioned between and extend across the space between the two slabs and which are integral with at least one of the slabs, said cables extending generally longitudinally between said anchor members and having opposite end portions anchored respectively therein, and each of said cables extending from and adjacent each of its said anchored end portions in the space between said slabs first angularly toward its other end portion and angularly toward one of said slabs, then angularly in free passage through said one slab, and finally in parallel adjacent relationship with said one slab and on an opposite side thereof to its said opposite end portion, and each of said cables adjacent its anchored end portions also passing angularly in free, unconnected and unobstructed passage through said space and the lattice work between said slabs.

4,620,401

STRUCTURAL ROD FOR REINFORCING CONCRETE MATERIAL

Chantal L'Espérance, Sherbrooke, and Germain Bélanger, St. Germain de Grantham, both of Canada, assignors to Societe Nationale de l'Amiante, Quebec, Canada

Filed May 3, 1985, Ser. No. 730,205
Int. Cl.[4] E04B *5/04*
U.S. Cl. 52—309.15 12 Claims

1. A structural rod for reinforcing a mass of concrete material comprising:
(a) a non-metallic non-electrically conductive cylindrical core composed of a plurality of continuous fibers oriented substantially in the longitudinal axis and bound to one another by a thermosetting resin; and
(b) embossment means on said core, being formed of a plu-

rality of continuous fibers helically wound around said core and impregnated with a thermosetting resin;

said thermosetting resin achieving a strong bond between the core and the fibers helically wound thereabout so as to

prevent relative movement between said core and said embossment means:

said embossment means defining a mechanical anchorage bond with concrete material when said rod is embedded in said mass of concrete material.

4,620,402

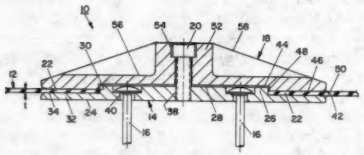
PENETRATING ROOFING FASTENING AND SEALING SYSTEM

Heinz W. Beneze, Richfield, Ohio, assignor to The Firestone Tire & Rubber Company, Ohio

Filed Jan. 22, 1985, Ser. No. 693,639

Int. Cl.[4] E04B *5/00, 1/38;* **F16B** *33/00*

U.S. Cl. 52—410 **20 Claims**



1. A penetrating, fastening and sealing device for both mechanically securing a flexible elastomeric sheet, of a range of thicknesses, to the upper surface of a roof, and sealingly engaging said sheet, wherein said sheet is provided with an aperture of a first predetermined area and shape, said device comprising a combination:

(a) a rigid lower retainer, having an area greater than said sheet aperture area, adapted to be passed through said sheet aperture so as to underlie and completely cover said aperture, said lower retainer having a bottom surface and an upper surface, with the center portion of the lower retainer being stepped having an area and shape generally corresponding with those of said sheet aperture and having an outer peripheral surface adapted for locating the corresponding peripheral wall portion of the sheet that defines said sheet aperture, said upper surface of the lower retainer further including a continuous outer flange portion adapted to underlie a corresponding portion of a lower surface of said sheet, and said bottom surface of the lower retainer overlying said upper roof surface and said center portion being aligned with and extending into said sheet aperture;

(b) means for anchoring aid lower retainer to said roof upper surface;

(c) a rigid upper retainer, having an area greater than said sheet aperture area, adapted to overlie and completely cover said aperture, thereby confining a continuous peripheral portion of said sheet, bordering said sheet aperture, between said upper and lower retainers; and

(d) separate fastener means engageable with a center portion of the upper retainer and extending from said upper retainer into a center portion of the lower retainer for drawing said retainers perpendicularly against each other to sealingly secure the elastomeric sheet between said retainers.

4,620,403

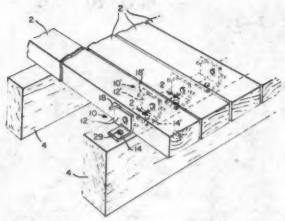
NAILING ANCHOR AND METHOD OF USE

Gerald L. Field, 2907 Northeast 55th, #1, Seattle, Wash. 98105

Filed Oct. 10, 1984, Ser. No. 659,270

Int. Cl.[4] E04B *5/52*

U.S. Cl. 52—480 **23 Claims**



1. An anchoring device for use in attaching a series of substantially parallel boards to a generally transversely oriented member, comprising:

a spacer member for separating a pair of adjacent boards by a predetermined distance, the spacer member having a toe-nailing slot for toe-nailing the spacer member to the one adjacent board and the transverse member;

a first tab fixedly attached to a first end portion of the spacer member and projecting generally perpendicularly therefrom for positioning between the other adjacent board and the transverse member, the first tab having a tie-down aperture for fixedly attaching the first tab to the transverse member;

a second tab fixedly attached to the first end portion of the spacer member and projecting generally perpendicularly therefrom in a direction opposite the first tab for positioning between the one adjacent board and the transverse member; and

a grasping member fixedly attached to an opposite second end portion of the spacer member and projecting generally perpendicularly therefrom in the same general direction as the first tab for embedding into the other adjacent board and holding the board stationary.

4,620,404

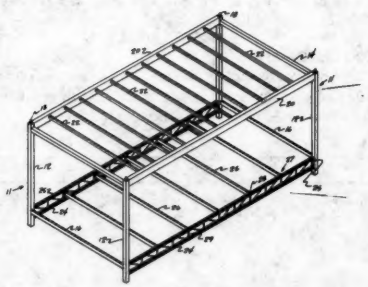
BUILDING PANEL

Jihad F. Rizk, Beirut, Lebanon, assignor to Polyfab S.A.R.L., Beirut, Lebanon

Filed Jun. 14, 1983, Ser. No. 504,363

Int. Cl.[4] E04B *5/04*

U.S. Cl. 52—602 **12 Claims**



1. In combination a building structure having a framework and a fiber reinforced concrete cladding building panel secured to said framework, said panel comprising an elongated body,

said body having a generally planar exterior surface and an interior surface, said body including an inturned flange of unitary construction therewith located at an upper end of same, said body further including a plurality of reinforcing ribs of unitary construction therewith and extending outwardly from said interior surface, at least two of said ribs being located at outer edges of said body and extending longitudinally therealong, a plurality of bolt connector means secured to said interior surface of said body, inwardly from upper and lower portions of same for securement of said panel to said framework, a plurality of second connector means secured to said body at said longitudinal edge ribs for interconnection with adjacent panels, said body defining a longitudinal groove along one edge of said exterior surface, said inturned flange being uninterrupted across the width of said body, and extending inwardly from said exterior surface inwardly of said framework to which said panel is secured.

4,620,405

STRUCTURAL MEMBER

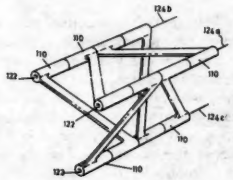
Tristan G. Melland, Sandton, South Africa, assignor to David J. Stainer, Johannesburg, South Africa

Filed Sep. 22, 1983, Ser. No. 535,174

Claims priority, application South Africa, Sep. 24, 1982, 82/7027

Int. Cl.⁴ E04H *12/00*

U.S. Cl. 52—645 **10 Claims**



1. A versatile modular unit for use in forming a structural beam, the unit comprising:

(a) an elongate, round tubular member having an identical first and second end;

(b) said tubular member including connection means at each end of the tubular member for matingly connecting each end of the tubular member in direct, face-to-face twist-free contact with the end of the tubular member of an identical modular unit positioned in end-to-end, coaxial relation with the first mentioned modular unit;

(c) a triangular link member which extends rigidly and traversely from the tubular member, the link being connected to the tubular member;

(d) a strut which forms at least a part of the triangular link member and which extends from the tubular member at an acute angle to the tubular member, the strut being connected to the tubular member;

(e) a flange being located at an end of the strut remote from the tubular member, the flange presenting a generally planar flange surface which is contained in a plane normal to a plane containing an end of the tubular member; and

(f) the flange surface being adapted to contact the corresponding flange surface of an identical modular unit arranged with its tubular member parallel to, but spaced from, the tubular member of the first-mentioned modular unit, whereby the struts of the units are coaxial and form, in combination, a continuous diagonal brace between the spaced, parallel tubular members.

4,620,406

SCREEN SLEEVE FOR USE WITH A HARDENABLE MASS FOR SECURING AN ANCHORING ELEMENT

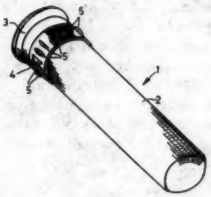
Robert Hügel, Kaufering, Fed. Rep. of Germany; Sven Kolb, Bregenz, Austria, and Erich Leibhard, Munich, Fed. Rep. of Germany, assignors to Hilti Aktiengeselischaft, Liechtenstein

Filed Jul. 16, 1985, Ser. No. 755,423

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1984, 3426174

Int. Cl.⁴ E04B *1/38*

U.S. Cl. 52—704 **8 Claims**



1. Screen sleeve for use in combination with a hardenable mass for securing an anchoring element in an opening or bore formed in a receiving material, comprising an axially elongated wire mesh cylindrically shaped tubular member having a leading end inserted first into the receiving material and a trailing end and forming a bore therein extending between the leading end and the trailing end, said tubular member being open at the trailing end and closed at the leading end, a flange formed at the trailing end of said tubular member extends transversely of the axis of and radially outwardly from said tubular member, said tubular member adjacent the trailing end thereof has at least one outwardly extending protrusion formed of the wire mesh forming said tubular member.

4,620,407

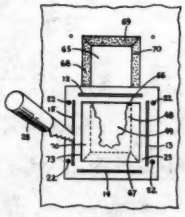
METHOD FOR DRYWALL PATCHING

Roy Schmid, 170 Autumn Dr., Southington, Conn. 06489

Filed Aug. 16, 1985, Ser. No. 766,138

Int. Cl.⁴ E02D *37/00*

U.S. Cl. 52—741 **2 Claims**



1. A method of repairing a damaged portion of a previously installed drywall such as sheet-rock and plasterboard and the like, comprising the steps of:

placing a template (10) over the damaged portion of the drywall (41) so that the damaged portion is visible through a template window (75);

temporarily securing the template to the drywall;

inserting a saw blade (25) into a template slot (12,13,14 and 15) of the template and through the drywall;

circumscribing a window (42) in the drywall about the damaged portion with said window being defined by sloped wall edges (43,44,45 and 46);

removing the template from the drywall;

removing the damaged section of the drywall (48);

smoothing the outer surface of the drywall about window (41) to generally smooth any ragged edges;

removing any loose debris from and about the sloped wall edges (43,44,45 and 46);

moistening the sloped wall edges (43,44,45 and 46);

preparing a repair plug (27) with sloped wall edges (33,34,35 and 36) by moistening the sloped wall edges and covering them with a layer of patching compound;

inserting the repair plug into the window (42) put in the drywall;

applying inward pressure on the repair plug to seat the repair plug such that its sloped wall edges (33,34,35 and 36) abut or are juxtaposed with a respective one of said sloped wall edges (43,44,45 and 46) defining the circumscribed window (42), with a layer of patching compound being interposed therebetween, and with the front surface (31) of the repair plug being recessed slightly below the front surface (76) of the drywall; and

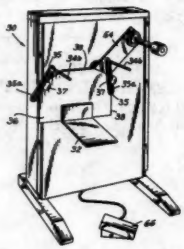
applying patching compound over the front surface (31) of the repair plug to form a smooth surface (50) with the front surface (76) of the drywall.

4,620,408

ORBITAL STRETCH WRAPPING APPARATUS

Melvin G. Parnes, Milford, N.J., assignor to Overwrap Equipment Corporation, Fairfield, N.J.

Filed May 25, 1984, Ser. No. 614,194
Int. Cl.[4] B65B *13/04*
U.S. Cl. 53—77 4 Claims



1. An improved orbital stretch wrapping apparatus which comprises:

a rotatable stretch wrapping mechanism supported in a housing;

a wrapping material spindle rotably affixed to said wrapping mechanism;

a package support back plate movably affixed to said rotatable stretch wrapping mechanism and adapted to rotate in a rotary direction opposite to the rotary direction of said wrapping mechanism, said package support back plate including a platform that is disposed in a substantially horizontal position during rotation of the wrapping mechanism;

at least two substantially horizontal package support finger means affixed to said package support back plate at an elevation above said platform means for movably affixing said fingers in their substantially horizontal orientation to said back plate so that said fingers can be adjusted relative to said platform; and

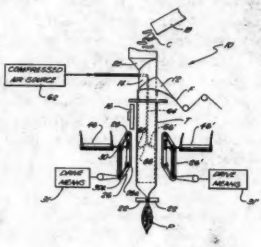
a locking means associated with each finger means for inhibiting the movement of said package support finger means once it has been positioned to hold said package against said platform.

4,620,409

PACKAGING FILM FEED WITH PARALLELOGRAM BELT SUPPORT

Howell T. McElvy, Decatur, Ga., assignor to Kliklok Corporation, Greenwich, Conn.

Filed Jan. 14, 1985, Ser. No. 691,437
Int. Cl.[4] B65B *9/08, 41/12*
U.S. Cl. 53—551 10 Claims



1. A feed system for packaging film in a form, fill and seal packaging machine or the like, comprising:

endless belt means for engaging and advancing the packaging film;

guide roller means including two idler rollers for guiding said endless belt means to provide a section of said belt means between said guide roller means for engaging the packaging film;

drive roller means including two additional rollers provided away from the packaging film for driving said endless belt means;

a parallelogram linkage for connecting said guide roller means and drive roller means with one roller being positioned at each corner in said linkage, said linkage supporting and positioning said guide roller means in a determinable rest position wherein said guide roller means is away from the packaging film and precisely returning said guide roller means to a feed position wherein said guide roller means is adjacent the packaging film so that pressure provided over substantially the entire length of said engaging surface of said belt means to the packaging film remains constant; and

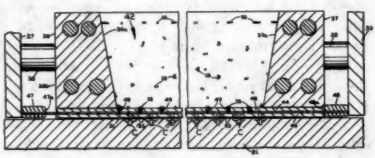
actuating means for moving said guide roller means supportedon said parallelogram linkage between said feed and rest positions.

4,620,410

CANNULAR FEEDING APPARATUS

Daniel J. Chiodo, Hialeah; Gaylord R. Shirley, Delray Beach, and Joseph Oquendo, Hialeah Gardens, all of Fla., assignors to Medicore Inc., Miami, Fla.

Filed Sep. 18, 1985, Ser. No. 777,448
Int. Cl.[4] B65B *35/30, 55/20*
U.S. Cl. 53—561 10 Claims



1. For use with a plastic molding machine having:

a bottom mold plate with a plurality of horizontally elongated mold cavity recesses open at the top, each shaped and dimensioned to receive an individual horizontally disposed hypodermic needle;

and a platen above said bottom mold plate for closing said mold cavity recesses with the hypodermic needles therein;

said bottom mold plate being horizontally movable laterally from beneath said platen to a loading position for receiving hypodermic needles in said mold cavity recesses;

an apparatus for feeding hypodermic needles by gravity into said mold cavity recesses when said bottom mold plate is offset laterally from beneath said platen to said loading position, said apparatus comprising:

a magazine having a hopper for holding a plurality of horizontally disposed hypodermic needles stacked on top of one another and having

(1) an upper bottom plate at the bottom of said hopper having a plurality of horizontally disposed openings, each shaped and dimensioned to pass an individual horizontally disposed hypodermic needle downward, and

(2) a lower bottom plate spaced below said upper bottom plate and having a plurality of horizontally elongated openings, each shaped and dimensioned to pass an individual horizontally disposed hypodermic needle downward, each of said openings in the lower bottom plate being offset in one direction horizontally a predetermined distance from a corresponding opening in the upper bottom plate;

and a shuttle plate located between said upper and lower bottom plates of the magazine;

said magazine and said shuttle plate being relatively adjustable horizontally in said one direction;

said shuttle plate having a plurality of horizontally elongated openings, each shaped and dimensioned to pass an individual horizontally disposed hypodermic needle downward and each positioned

(1) to register with a corresponding opening in the upper bottom plate of the magazine in one position of the magazine relative to the shuttle plate, and

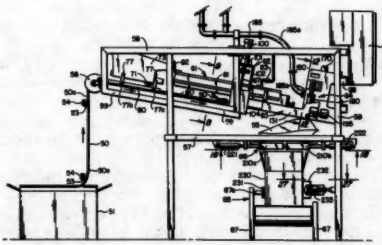
(2) to register with a corresponding opening in the lower bottom plate of the magazine in another position of the magazine relative to the shuttle plate.

4,620,411

FILLER FOR BAGS CONNECTED IN A CONTINUOUS STRIP

Warren J. Schieser, Dublin; Stanley E. Vickers, Hideaway Hills, and Craig L. Duffey, Galena, all of Ohio, assignors to Liqui-Box Corporation, Worthington, Ohio

Filed Apr. 1, 1985, Ser. No. 718,150
Int. Cl.[4] B65B *3/04, 43/40, 43/54*
U.S. Cl. 53—570 **57 Claims**



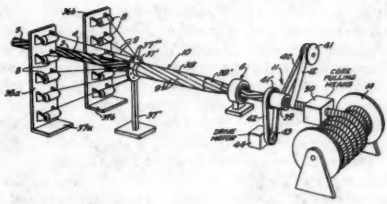
1. A machine for successively filling the bags of a continuous strip which have spouts at longitudinal intervals that carry removable caps or the like comprising a strip-feed section, a separator section, a separated bag-feed section and a filling section; said strip-feed section comprising means for engaging the capped spout of the leading bag of the strip and moving it into said separator section, said separator section having a separator for engaging the strip and separating the leading bag therefrom, said separated bag-feed section comprising means for engaging the capped spout of the separated bag to move it into the filling section in a fill position, said filling section including an uncapping and capping mechanism and a fill-head, said mechanism first uncapping the cap from spout and moving it to a position away from the fill-head and after filling of the uncapped bag, replacing the cap on said spout.

4,620,412

PROCESS AND APPARATUS FOR INSERTING OPTICAL FIBERS IN HELICAL GROOVES OF A CABLE CORE

Antonio Portinari, Sesto San Giovanni, Italy, assignor to Societa Cavi Pirelli S.p.A., Milan, Italy

Filed Dec. 12, 1985, Ser. No. 808,335
Claims priority, application Italy, Dec. 17, 1984, 24091 A/84
Int. Cl.[4] D07B *5/00;* **D01H** *13/04*
U.S. Cl. 57—6 **12 Claims**



1. Process for manufacturing an optical fiber cable comprising a plastic core with a helical groove or grooves at its surface in which at least one optical fiber is disposed, said process comprising:

advancing said core with said groove or grooves on its surface to and through an optical fiber inserting device at which at least one optical fiber is inserted in said groove or grooves, said fiber inserting device being rotatably mounted and extending around said core and said fiber inserting device having at least one projection thereon which extends into one of said grooves;

upstream of said fiber inserting device, passing said core through a tube; and

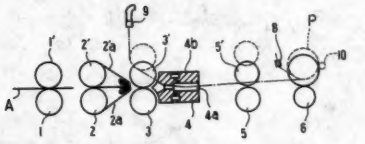
feeding at least one optical fiber, from a rotatable bobbin mounted in a fixed position upstream of said tube, adjacent the outer surface of said tube to said fiber inserting device.

4,620,413

METHOD OF YARN PIECING A SPINNING UNIT

Meiji Anahara, and Kazuo Seiki, both of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Oct. 11, 1983, Ser. No. 540,825
Claims priority, application Japan, Oct. 15, 1982, 57-179952
Int. Cl.[4] D01H *15/02, 5/28*
U.S. Cl. 57—261 **8 Claims**



1. A method of yarn piecing in a fasciated yarn spinning unit comprising a fiber drafting device having aligned plural pairs of top and bottom drafting rollers providing a fiber drafting path, a false-twisting nozzle for receiving drafted fiber or fleece from said drafting device and having a fiber passage

channel extending therethrough in which said fleece is false-twisted, while it is moved forward in said channel, into a strand of spun yarn to be wound up on a driven yarn package, said drafting device including a driven front pair of drafting rollers and at least one driven back pair of drafting rollers whose nips engage said fleece and impart forward movement thereto towards said front pair of rollers, at least either of the top and bottom rollers of said front pair being liftable from the other of the pair, said method comprising the steps of:

stopping one of said pairs of drafting rollers in response to a break in the spun yarn to stop said fleece movement through said nip thereof, whereby the fleece is broken off to provide a stationary broken end of the fleece at a location just forward of the nip; and

moving the liftable roller of said front pair of drafting rollers to separate the pair;

picking up the broken end of said spun yarn from said yarn package and passing the yarn in reverse direction through said fiber passage channel of said false-twisting nozzle and then through the gap formed between said separated front pair of drafting rollers while driving said yarn package in reversed direction, to position said yarn broken end at a location displaced from said fiber drafting path and spaced a predetermined distance rearwardly from the location of said nip of said front pair of drafting rollers to thereby provide a predetermined piecing length of spun yarn extending outside of said fiber drafting device;

restarting the previously stopped drafting rollers to again move said fleece in said forward direction; and

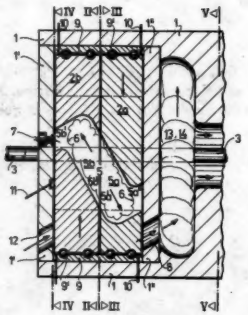
returning the liftable roller of the front pair of drafting rollers to its original position in engagement with the other of the pair to restart said front pair of drafting rollers to move said piecing length of spun yarn in said forward direction through said front pair of drafting rollers only after said broken end of said moving fleece has reached and is between said nip of the front pair of rollers, and again driving said yarn package to wind said spun yarn thereon, whereby said piecing length of spun yarn is pieced with said fleece within said false-twisting nozzle.

4,620,414

GAS TURBINE ENGINE

Dieter Christ, Hinter der Altdörfer Kirche 30, D-6113 Babenhausen 1, Fed. Rep. of Germany

Filed Feb. 13, 1985, Ser. No. 701,363
Int. Cl.[4] F02C *3/16*
U.S. Cl. 60—39.34 **5 Claims**



1. A gas turbine engine comprising a housing having two opposing end walls; at least two rotatable circular discs concentrically arranged on a drive shaft and being tightly adjacent to each other, transmission means interconnecting said discs and drive shaft such that said discs are rotatable in counter directions and are adapted to drive the drive shaft in the same direction, each disc tightly engaging an adjacent one of said end walls at an end face thereof; ignition means; an end wall adjacent to a first of said discs having at least one inlet opening periodically connected with a compressor and fuel supply means for supplying an air-fuel mixture, an end wall adjacent to a second disc having at least one outlet opening for combustion gases; said first disc being formed with a plurality of first partial combustion chambers arranged over a circumference of the first disc and each having an inlet and an outlet, the outlet being provided at a side of the first disc facing the second disc and inclined in a direction of rotation of the second disc; said second disc being formed with a plurality of second partial combustion chambers arranged over a circumference of the second disc and each having an inlet adapted to and communicating with an outlet of one of said first partial combustion chambers so that upon rotation of said discs, the inlet of a respective second partial combustion chamber can be aligned flush with the outlet of a respective first partial combustion chamber, each outlet of each second partial combustion chamber being inclined in a direction opposite to the direction of rotation of the second disc and being arranged at a side of the disc opposite to that at which the inlet of the second partial combustion chamber is located so that a deflection occurs within each disc between each inlet and each outlet of each partial combustion chamber and such a deflection in the first disc is opposite to the deflection in the second disc; said first and second partial combustion chambers being in connection with each other and forming a common combustion chambers enclosed at two sides thereof by said end walls, the outlets of said second partial combustion chambers being in a periodic connection with said outlet opening during the rotation of said second disc.

4,620,415

METHOD FOR INITIATING DECOMPOSITION OF HYDRAZINE FUELS

Eckart W. Schmidt, Bellevue, Wash., assignor to Rocket Research Company, Redmond, Wash.

Filed Sep. 29, 1983, Ser. No. 536,987
Int. Cl.[4] C06D *5/00*
U.S. Cl. 60—219 **4 Claims**

1. A method for spontaneously initiating the decomposition of a liquid hydrazine fuel, comprising contacting the hydrazine fuel with a nonhydroscopic solid initiator comprising at least one compound selected from the group consisting of heteropoly acids having iodine as their central atom and their salts.

4,620,416

LOAD SENSING SYSTEM

James K. Yip, Richfield, and William J. Novacek, Bloomington, both of Minn., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jun. 14, 1982, Ser. No. 388,378
Int. Cl.[4] B62D *5/08*
U.S. Cl. 60—384 **10 Claims**

1. In a fluid controller operable to control the flow of fluid from a source of pressurized fluid to a fluid pressure operated device, the source of fluid including pressure responsive means for varying the delivery of fluid to the controller, the controller being of the type including:

(1) housing means including an inlet port for connection to the source of fluid, a return port for connection to a reservoir, first and second control fluid ports for connection to the fluid pressure operated device, and a load signal port for connection to the pressure responsive means;

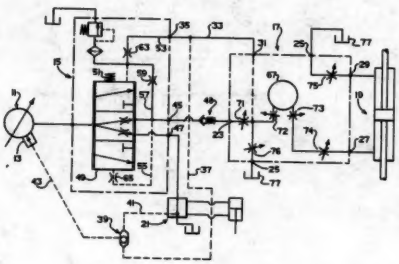
(2) valve means disposed in said housing means and defining a neutral position and at least one operating position;

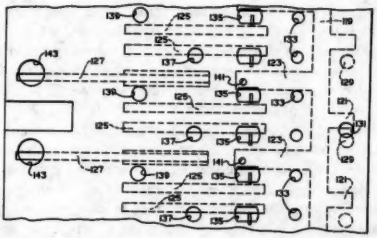
(3) means for imparting follow-up movement to return said valve means to said neutral position in response to the flow of fluid to or from the fluid pressure operated device;

(4) said valve means defining a load signal circuit operable to communicate to said load signal port a fluid pressure representative of the load on the fluid pressure operated device;

(5) said valve means cooperating with said housing means to define a first flow path communicating between said inlet port and said follow-up means, a second flow path communicating between said follow-up means and one of said control fluid ports, and a third flow path communicating between the other of said control fluid ports and said return port, said first, second, and third flow paths including first, second, and third variable orifices, respectively, at least said first and third variable orifices having a zero flow area when said valve means is in said neutral position, and a gradually increasing flow area as said valve means is moved toward said operating position;

(6) said valve means and said housing means defining a drain flow path communicating between said load signal circuit and said return port and including a variable drain orifice





having a maximum flow area when said valve means is in said neutral position and progressively decreasing to a zero flow area as said valve means moves toward said operating position;

the source of pressurized fluid including means operable to communicate dynamic load signal fluid into said load signal circuit, characterized by:

(a) said third variable orifice begins to open before said first variable orifice begins to open as said valve means moves from said neutral position to said operating position; and

(b) said variable drain orifice remains open at least until said third variable orifice begins to open, thereby substantially reducing pressure spikes in said flow paths as said valve means moves from said neutral position to said operating position.

4,620,417

CONTROL DEVICE FOR A HYDROSTATIC GEAR DRIVEN BY A DRIVE ENGINE

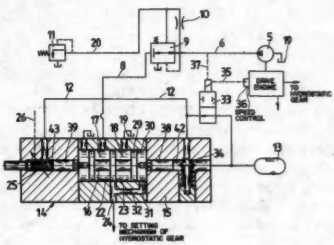
Johann Wuchenauer, Opferstetten, Fed. Rep. of Germany, assignor to Hydromatik GmbH, Fed. Rep. of Germany

Filed Oct. 16, 1984, Ser. No. 661,400

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1983, 3338595

Int. Cl.[4] F16H *39/46*

U.S. Cl. 60—431 **4 Claims**



1. Control device for a hydrostatic gear driven by a drive engine, preferably an internal-combustion engine, comprising:

an auxiliary pump driven synchronously with the drive engine to produce a control pressure, adjustable via a regulating valve and dependent upon the speed of the drive engine, in a control line connected to the setting mechanism of the hydro-pump and/or the hydro-motor of the hydrostatic gear,

a regulating device to limit the control pressure from a predetermined speed of the drive engine,

a pressure reducing valve in the control line to eliminate the control pressure as a function of an external parameter,

the pressure reducing valve comprising:

(1) a spool valve which delimits a first control area connected with a control pressure medium inlet and a second control area connected with a pressureless outlet, said spool valve connecting the control pressure line leading to the setting mechanism of the hydro-pump and/or of the hydro-motor with the first or second control area via restrictors, and said spool valve having, on one side, a control surface with associated cylinder area on which surface control pressure medium is able to act upon the spool valve in the direction of adjustment for opening of the control pressure line to the pressureless outlet against the force of a pressure spring which acts on the other side of the spool valve and which may be adjusted by the external parameter, said cylinder area being connected to the control pressure line on the downflow side leading to the adjusting device thereby regulating the control pressure as a function of the speed of the drive engine,

(2) a pair of measuring pistons one of which lies between the pressure spring and the spool valve and the other rests against the control surface of the spool valve each said measuring pistons having measuring surfaces which operate against each other and upon which said control pressure acts,

an auxiliary control pressure line through which an auxiliary control pressure, dependent upon the speed of the drive engine, communicates with the control surface of said spool valve, and

a pressure reservoir, to which the auxiliary control pressure medium may be supplied through a check valve which opens to the pressure reservoir, and through a 2/2 distributing valve arranged parallel to said check valve in the auxiliary control pressure line operating in the direction of the control surface of the spool valve, whereby the control pressure is reduced as a function of the position of a

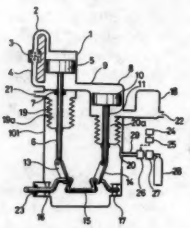
speed adjusting element of the drive engine as the distributing valve is closed when the speed adjusting element of the drive engine is in the position "acceleration" and is opened when the element is in the position "deceleration".

4,620,418

STIRLING ENGINE

Michio Fujiwara, Akashi; Yoshio Kazumoto, Itami; Tamotsu Nomaguchi, Minou, and Kazuo Kashiwamura, Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 3, 1985, Ser. No. 751,725
Claims priority, application Japan, Jul. 6, 1984, 59-141025
Int. Cl.[4] F02G 1/04
U.S. Cl. 60—517 4 Claims



1. A Stirling engine wherein a pressure variation is provided by reciprocative movement of a displacer and is utilized by a power piston to obtain an output motive force, which comprises:

a pressurized crankcase,

an expansion cylinder having a seal carrying wall,

a displacer located in said expansion cylinder,

a displacer rod connected to said displacer and projecting through said seal and into said crankcase,

a first elastic film attached to said displacer rod and to said seal carrying wall so as to produce a first hermetically sealed space,

a compression cylinder,

a power pistion having a power pistion rod located in said compression cylinder,

a second elastic film attached to said power piston rod and to said compression cylinder so as to produce a second hermetically sealed space below said power piston,

said first and said second hermetically sealed spaces being included in a pressurized reactive space,

a pressure adjusting means for equalizing the mean pressure within said reactive space and the mean pressure within said crankcase,

a heater tube, a regenerator, and a cooler tube are connected to said expansion cylinder, and are included in a working space, as is the expansion cylinder and the compression cylinder, and

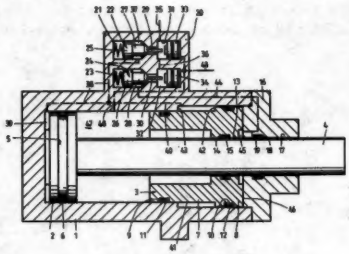
a first gas having a low viscosity, a low molecular weight and a high thermal conductivity is sealed in said working space and said reactive space, and a second gas having a high viscosity and a high molecular weight is sealed in said crankcase.

4,620,419

HYDRAULIC CYLINDER WITH POWER-MULTIPLICATION

Dionizy Simson, Winterthur, Switzerland, assignor to ENFO Grundlagenforschungs AG, Döttingen, Switzerland

Filed May 10, 1985, Ser. No. 732,723
Claims priority, application Switzerland, May 11, 1984, 2357/84
Int. Cl.[4] F15B 7/00
U.S. Cl. 60—560 3 Claims



1. A hydraulic cylinder device which comprises

a cylinder which includes a first end and a second end and which defines a central axis therethrough, said second end having a bore therethrough along said central axis, said cylinder also including an internal bore which extends along said central axis, said internal bore including a first portion of smaller diameter and a second portion of a larger diameter, said second portion being separated from said first portion by a first annular step which faces said second end of said cylinder;

a primary piston which is sealingly postioned in said first portion of said internal bore and is movable along said central axis, said primary piston including a piston rod which extends along said central axis and sealingly and movably extends through the bore in said second end of said cylinder, said primary piston and said first end of said cylinder defining a first pressure chamber therebetween;

a secondary piston which is positioned in said bore and is movable along said central axis, said secondary piston having a bore therethrough through which said piston rod sealingly and movably extends, said secondary piston also including a first part of smaller diameter which is sealingly positioned in said first portion of said bore and a second part of larger diameter which is sealingly positioned in said second portion of said bore, said second part being separated from said first part by a second annular step which faces said first end of said cylinder, said second annular step and said first annular step helping define a step chamber therebetween, said second part of said secondary piston and said second end of said cylinder defining a second pressure chamber therebetween;

hydraulic control means;

a first fluid conduit means connecting said first pressure chamber with said step chamber;

a second fluid conduit means connecting said hydraulic control device with said first fluid conduit means; and

a third fluid conduit means connecting said hydraulic control device with said second pressure chamber.

4,620,420
DEVICE FOR REDUCING DRIVE SLIP OF MOTOR VEHICLES PROVIDED WITH TURBO CHARGED ENGINES

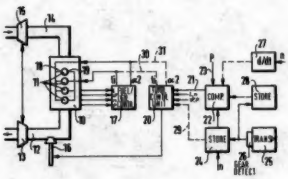
Erwin Gloss, Korntal; Gerhard Lotterbach, Markogroeningen; Egbert Perenthaler, Stuttgart; Manfred Schenk, Schorndorf; Jan F. van Woudenberg, Schweiberdingen, and Udo Zucker, Boennigheim, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 27, 1984, Ser. No. 675,333

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1983, 3344819

Int. Cl.[4] F02B *37/00*

U.S. Cl. 60—602 **5 Claims**



1. A device for reducing drive slip of a motor vehicle having a turbo charged internal combustion engine, drive wheels and a transmission between the drive wheels and the engine, the device comprising means for detecting information about engaged gear in the transmission, means for controlling charged air pressure of the engine in dependency on rotary speed of the engine and on the detected gear information, said controlling means including a device for storing desired values of charged air pressure, said desired values of charged air pressure being determined in dependency on the engaged gear at a rotary speed as a parameter in such a manner that the torque on an axle of at least one drive wheel is substantially independent from the engaged gear.

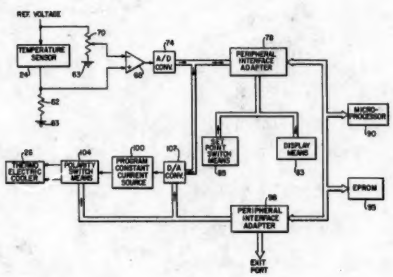
4,620,421
TEMPERATURE STABILIZATION SYSTEM

Winthrop K. Brown, and Frank L. Lankford, Jr., both of Bellaire, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed May 26, 1983, Ser. No. 498,390

Int. Cl.[4] F25B *21/02, 29/00*

U.S. Cl. 62—3 **10 Claims**



1. A system for stabilizing the temperature of a radiation detector assembly comprising:

heat pipe means, generally enclosing said radiation detector assembly whereby ambient heat is absorbed by said heat pipe means,

sensor means responsive to the temperature in said heat pipe means for providing a constant current temperature signal representative of the sensed temperature,

heat control means for selectively controlling the temperature within said heat pipe means in accordance with a constant current control signal, and

signal means located at a substantial distance from said radiation detector assembly and connected to the sensor means and the heat control means for providing the constant current control signal to the heat means in accordance with the constant current temperature signal from the sensor means so as to control the temperature of the radiation detector assembly.

4,620,422
PROCESS FOR THE PRODUCTION OF PROCESSED ICE CONTAINING SOLUBLE ADDITIVES OR MATERIALS DISPERSED THEREIN

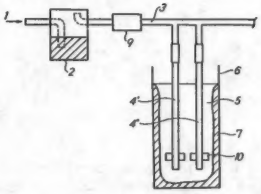
Hidehiro Hosokawa, Yokohama; Yoshimichi Iida, Saitama, and Hisatsugu Takahashi, Chiba, all of Japan, assignors to Nichirei Corporation, Tokyo, Japan

Filed Jul. 22, 1985, Ser. No. 757,855

Claims priority, application Japan, Jul. 31, 1984, 59-158670

Int. Cl.[4] F25C *1/18*

U.S. Cl. 62—70 **12 Claims**



1. A process for producing processed ice containing soluble additives or materials dispersed therein, which comprises adding and dissolving soluble additives or materials in raw water for ice making in an ice can, and cooling and freezing the raw water while blowing air into the raw water from a blowing means and agitating the raw water with air, wherein the air is under a pressure close to a minimum pressure required for dispersing bubbles in the raw water, thereby dispersing the soluble additives or materials in the ice without substantially deteriorating the transparency of the resulting ice.

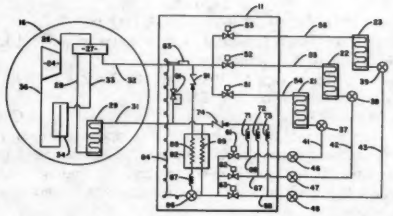
4,620,423
EXPANSION DEVICES FOR A MULTIZONE HEAT PUMP SYSTEM

Harold H. Hopkinson, Manlius, N.Y., and Eiichi Iiyama, Niiza, Japan, assignors to Carrier Corporation, Syracuse, N.Y.

Filed Sep. 25, 1985, Ser. No. 779,894

Int. Cl.[4] F25B *45/00*

U.S. Cl. 62—77 **8 Claims**



1. An improved heat pump system of the type having a single outdoor coil and multiple indoor coils comprising:

a plurality of individual refrigerant flow lines fluidly connected at their one ends to respective individual indoor

coils and at their other ends to a common refrigerant flow line fluidly connected to the outdoor coil; and

a refrigerant expansion device in each of said individual refrigerant flow lines, each of said expansion devices being operable when the system operates in the heating mode to receive liquid refrigerant from its respective outdoor coil and cause at least a portion of the refrigerant to expand to a vaporous condition.

4,620,424

METHOD OF CONTROLLING REFRIGERATION CYCLE

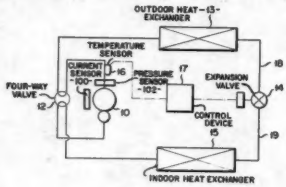
Tatsuo Tanaka, Fuji; Koichi Miyazaki, Shizuoka; Eiji Kuwahara; Masaya Yamazaki, both of Fuji, and Keiichi Morita, Fujinomiya, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 27, 1984, Ser. No. 686,673

Claims priority, application Japan, Dec. 28, 1983, 58-245174

Int. Cl.[4] F25B *41/04*

U.S. Cl. 62—222 **9 Claims**



1. A method of controlling a refrigeration cycle in an apparatus including a compressor, an outdoor-side heat exchanger, an electromotive expansion valve, and an indoor-side heat exchanger which are connected in the order mentioned; said method comprising the steps of:

detecting a load of the refrigeration cycle;

adjusting an opening degree of the expansion valve in accordance with the magnitude of the detected load;

storing in a memory a loaded opening degree of the expansion valve which is indicated when the detected load exceeds a prescribed upper limit;

increasing the opening degree of the expansion valve to a predetermined upper level opening degree which is larger than said loaded opening degree in said storing step, to reduce the load of the refrigeration cycle to a level which is lower than a prescribed lower limit; and

after the load of the refrigeration cycle decreases below the lower limit, decreasing the opening degree of the expansion valve to an opening degree which is larger than said loaded opening degree by a prescribed extent, and is smaller than said upper level opening degree thereby keeping the load of the refrigeration cycle within predetermined operating limits.

4,620,425

THERMAL PROTECTOR HOUSING

Norman J. O'Grady, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Aug. 12, 1985, Ser. No. 764,311

Int. Cl.[4] F25B *49/00*

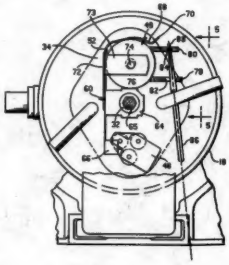
U.S. Cl. 62—230 **11 Claims**

7. A refrigerator cabinet including an opening therein providing access to a machine compartment, a hermetic compressor arranged in said machine compartment including a casing having a top wall provided with a vertically extending stud member;

a thermal overload protector arranged in a housing including a side wall, a top wall, and a lower edge portion dimensioned to conform to said casing top wall, a pair of leg members projecting outwardly from said side wall having a slot on one of said leg members aligned with an opening in the other one of said leg members dimensioned to be engagable by a tool inserted through said opening in said cabinet;

a retainer for removably securing said thermal overload protector housing to said compressor;

said retainer formed of an elongated, stiffly flexible metal stock and includes an opening intermediate its ends dimensioned for receiving said stud member, one end portion of said retainer being dimensioned to engage said top wall of



said housing to thereby hold said lower edge portion of said housing against said casing top wall with said lower edge portion juxtapositioned said casing top wall whereby an external force exerted by said tool positioned in said slot and opening in said leg members will allow removal of said thermal overload protection housing from between said retainer and said compressor casing top wall, and carried by said tool through said opening in said cabinet.

4,620,426

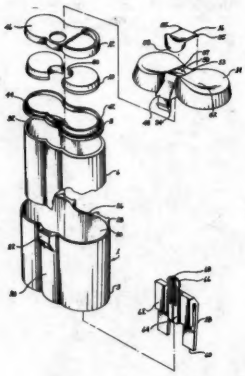
SPORTSMAN'S INSULATED BEVERAGE CONTAINER

Gary G. Pitchford, and Steven C. Pitchford, both of 9215 S. Montezuma, Phoenix, Ariz. 85041

Filed Sep. 23, 1985, Ser. No. 778,627

Int. Cl.[4] F25D *3/08*

U.S. Cl. 62—457 **16 Claims**



1. An insulated beverage container, comprising;

an outer casing for providing a housing for said insulated beverage container;

a foam housing means for providing insulation for said insulated beverage container abutting the inner surface of said outer casing means;

an end ring means suitable for seating on the top portion of said foam housing means;

an upper support member means for resting onto the upper portion of said end ring means;

a cover member means for integrally accommodating said upper support member means into the upper and inner surface of said cover member means;

a clip means for removably attaching onto the back portion of said outer casing means having at least two upwardly protruding members for being adjustably accommodated therein a member means integral to the back portion of said outer casing;

at least one blue ice container means for cooling liquid medium accommodated therein said insulated beverage container;

a female latch member means integral to the front portion of said outer casing means; and

a protruding member means integral to the front portion of said cover member means for being accommodated therein said female latch member means.

4,620,427

TRANSPORT DEVICE ON AN APPARATUS FOR LETTING OUT SKINS

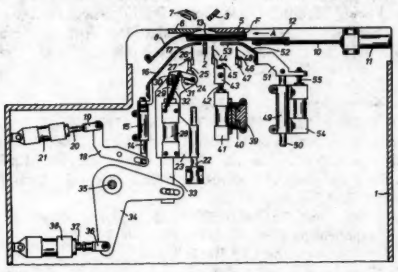
Herbert Dietrich, and Günther Mall, both of Kaiserslautern, Fed. Rep. of Germany, assignors to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

Filed Mar. 13, 1985, Ser. No. 711,408

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1984, 3409943

Int. Cl.[4] C14B *17/00*

U.S. Cl. 69—47 **4 Claims**



1. In an apparatus for letting out skins in which a base plate on which the skin is placed is advanced with the skin below two separable clamping jaws and a parting sword is moved upwardly to engage one side of the skin which is engaged on its opposite side by a hold-down so that the parting sword in the hold-down move together upwardly with the skin between the clamping jaws when they are separated and in a manner such that the folded over skin will be positioned by the parting sword in alignment with a sewing needle for sewing, the improvement comprising a support plate below the skin onto which the skin is fed having an upper curved portion with a slot, a needle bar, at least one skin penetrating needle connected to said needle bar and engageable through the skin to move the skin, drive means connected to said needle bar for moving said needle bar to move said skin penetrating needle for upward and downward movement and for movement off in a transverse drawoff direction and through the slot of said support plate, and means connected to said support plate for moving said support plate upwardly and downwardly and in a manner alternating with the upward and downward movement of said skin penetrating needle.

4,620,428

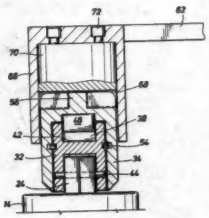
LOCK AND COUPLING FOR SECURING FIRE HYDRANTS

Albert B. Kopesky, Houston, Tex., assignor to Productive Instrument & Machine, Inc., Houston, Tex.

Filed Feb. 10, 1983, Ser. No. 465,622

Int. Cl.[4] F16K *31/08*

U.S. Cl. 70—175 **3 Claims**



1. A lock and coupling apparatus for use on a fire hydrant, comprising:

(a) an inner cylindrical member incorporating a socket cavity extending axially from one end thereof and terminating at a first transverse wall, said socket cavity conforming in shape and size to receive an upstanding post located on the fire hydrant, said post being operatively connected to a valve;

(b) cooperative transverse hole and lock pin means extending through said inner cylindrical member at an axial location thereon for fastening said cylindrical member to the post;

(c) a first, single, centrally located, nonround recess extending longitudinally from the other end of said inner cylindrical member and terminating at a second transverse wall; said first nonround recess slidably receiving a single conformed lock block of magnetizable material;

(d) an outer cylindrical member having an axially extending opening terminating at an end wall forming a shoulder, said opening adapted to receive rotatably said inner cylindrical member and said nonround recess thereof, said outer member further including an upstanding, nonround lug projecting therefrom and being completely closed at an axial location corresponding to the axial location where the lock pin extends through said inner cylindrical member wherein the outer cylindrical member can not be locked with respect to the inner cylindrical member where the axial locations align;

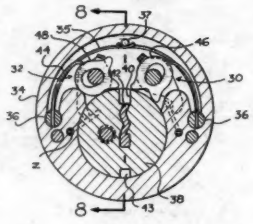
(e) a second, centrally located, nonround conformed recess countersunk in said end wall of said outer cylindrical member, said second recess being located opposite said first nonround recess upon positioning of said inner and outer members cooperatively together, wherein said first and second recesses are adapted to receive said magnetizable lock block jointly therein;

(f) a ring received in oppositely facing grooves formed in said inner and outer cylindrical members defining a circumferential channel therebetween coupling said inner member to said outer member to prevent relative axial displacement;

(g) means for rotating said outer member to open and close the valve of the fire hydrant, said rotating means comprising a wrench having a handle including an end located socket adapted to receive said nonround lug projecting from said outer cylindrical member, said wrench further including conforming nonround lug engaging means within said socket for engaging said nonround lug projecting from said outer member; magnetizing means completely enclosed within said socket for magnetically attracting said magnetizable lock block; wherein said magnetizable lock block joins said inner member and outer

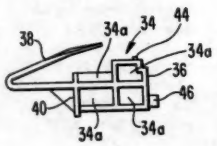
member for joint rotation upon engaging the lug engaging means with the lug.

4,620,429
CYCLE LOCK
John D. Quillen, 790 Woodland Ave., San Leandro, Calif. 94577
Filed Nov. 12, 1985, Ser. No. 796,773
Int. Cl.[4] E05B *25/00*
U.S. Cl. 70—383 **17 Claims**



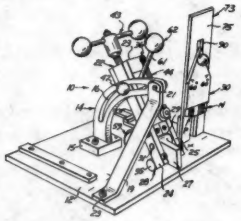
1. A cycle lock comprising:
a housing;
a cylindrical plug rotatably mounted in said housing and having a key-receiving slot therein that opens out to the cylindrical surface, said cylindrical plug having a first end and a second end; and
a plurality of flat disc-like tumblers, each tumbler in said plurality having an elongated central hole, said plurality being loosely mounted for compound rotational and radial movement on a tumbler shaft engaging each of said elongated holes and secured to said housing parallel with the rotational axis of said cylindrical plug, each of said plurality of tumblers having on its periphery a pair of spaced lobes, said tumblers being in a neutral state when both lobes on a tumbler are in contact with the surface of said cylindrical plug, each of said lobes being configured to enter the key-receiving slot in said plug in the absence of a high segment on a key in said key-receiving slot.

4,620,430
UNIVERSAL LOCK PLUG
Thomas L. Latone, Quakertown, Pa., assignor to Knoll International, Inc., New York, N.Y.
Filed Jun. 8, 1984, Ser. No. 618,493
Int. Cl.[4] E05B *17/00*
U.S. Cl. 70—431 **7 Claims**



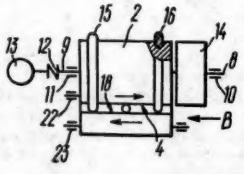
1. In a lock assembly of the type including a shell that receives a core having key-operated tumblers that coact with grooves in the shell, the improvement comprising a plug having no tumblers that replaces a core, said plug being insertable into a shell and pivotable by hand without the use of a key or tool about an axis within said shell to lock and unlock said lock assembly and removable from said shell without the use of a key or tool, and including retaining means thereon for retaining said plug within said shell.

4,620,431
GOLF CLUB STRAIGHTENING DEVICE
Douglas P. Muldoon, 26321 Wilson, Dearborn Heights, Mich. 48127
Filed Nov. 21, 1985, Ser. No. 800,422
Int. Cl.[4] B21C *51/00*
U.S. Cl. 72—31 **14 Claims**



1. Improvement in a golf club straightening device for straightening golf club irons, said device having a base, means for clamping the head of the golf club iron, means for examining the loft of the golf club iron, and means for examining the lie of the golf club iron, said improvement comprising an arcuate loft arm mounted stationary in respect to the base and upstanding therefrom, a swingarm mechanism comprising a pivot support stationary in respect to the base and upstanding therefrom and including a bifurcated swingarm pivotally mounted on said pivot support, upper and lower clamp means moveably carried on said bifurcated swingarm for clamping the head of a golf club iron so that the front face thereof is flat against the rear face of said bifurcated swingarm, said swingarm being pivotally moveable in respect to the said arcuate loft arm and being capable of being made fast in respect thereto by being clamped thereagainst, said arcuate loft arm having an angular scale thereon for determining the loft of said golf club.

4,620,432
DEVICE FOR MANUFACTURING MICROWIRE
Alexandr V. Stepanenko; Vladimir G. Voitov; Viktor S. Karpitsky, and Svyatoslav A. Bartashevich, all of Minsk, U.S.S.R., assignors to Belorussky Politekhnichesky Institut, Moscow, U.S.S.R.
Continuation of Ser. No. 517,965, Jul. 28, 1983, abandoned. This application May 31, 1985, Ser. No. 740,296
Int. Cl.[4] B21B *31/18*
U.S. Cl. 72—73 **2 Claims**



1. A device for manufacturing microwire of a first diameter from a rod having a second, larger diameter, comprising:
a first cylindrical roll having a working surface;
a member having a curvilinear working surface defining together with said working surface of said cylindrical roll a gap into which said rod is fed; said member comprises a shoe having a concave curvilinear working surface which continuously embraces a portion of said working surface of said cylindrical roll to define said gap therebetween;
a first rotation drive coupled mechanically with said first

cylindrical roll to advance said rod longitudinally in said gap; and

a drive coupled mechanically with said first cylindrical roll to roll said rod in the course of reciprocation at a rolling distance equal to at least a half of the product of the height of said gap by the constant number π;

the gap between said member and said first cylindrical roll decreasing continuously in the direction of rotation of said first cylindrical roll;

at least two axially spaced sleeves embracing the circumference of said cylindrical roll, said two cylindrical sleeves being made of a resilient friction material and equidistant from the center of the cylindrical roll; and

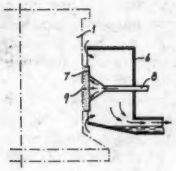
an endless metal band embracing said shoe and contacting said sleeves.

4,620,433

WIRE COOLING APPARATUS FOR A WIRE DRAWING MACHINE

Dominique Petkovic, Chelles, France, assignor to Office Technique des Trefiles, Chelles, France

Filed Jun. 12, 1985, Ser. No. 743,961
Claims priority, application France, Jun. 15, 1984, 84 09426
Int. Cl.[4] B21C *9/00*
U.S. Cl. 72—286 **7 Claims**



1. A cooling apparatus for use with a wire drawing machine including a die and a capstan for drawing a wire through the die, thereby heating the wire, and for winding turns of the thus drawn wire around the periphery of the capstan, said cooling apparatus comprising:

a housing adapted to be mounted adjacent the periphery of the capstan, said housing having a configuration facing the capstan substantially complementary to the periphery of the capstan;

means for supplying a cooling liquid through said housing and directing said cooling liquid directly against wire turns on the periphery of the capstan, thereby cooling the wire turns; and

means for collecting said cooling liquid into and through said housing after said cooling liquid has cooled the wire turns.

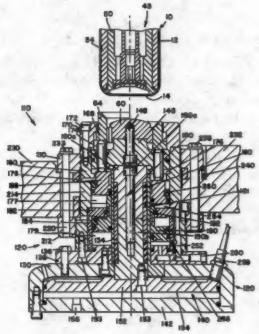
4,620,434

DOMER ASSEMBLY FOR CONTAINER-FORMING APPARATUS

Sam C. Pulciano, Norridge; Raymond Mikas, Chicago, and Robert M. Wyleta, Burbank, all of Ill., assignors to National Can Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 426,888, Sep. 29, 1982. This application Oct. 3, 1984, Ser. No. 657,224
Int. Cl.[4] B21D *22/00*
U.S. Cl. 72—347 **11 Claims**

1. Apparatus for reforming an end wall of a container shell comprising a punch reciprocable along a path with said container shell thereon, a base at the end of said path having a center tubular column having a center post telescoped therein with a central domer supported on said post and aligned with said punch, an enlarged reaction pad on an opposite end of said post and located in a sealed chamber on said base with pressurized fluid in said chamber to bias said central domer toward said punch, and an annular forming element surrounding said central domer with biasing means between said base and said annular forming element, said biasing means including first and second axially-spaced annular pistons around said column and engageable with said annular forming element and pressurized



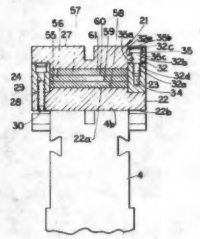
penumatic fluid means in communication with said first and second pistons to bias said annular forming element to a first position and accommodate constrained movement of said annular forming element in response to forces applied by said punch.

4,620,435

DEFLECTION COMPENSATING ASSEMBLY FOR FABRICATING MACHINE TOOLS

Francois Gabella, Aubonne, Switzerland; Raymond J. Graf, Cincinnati, and Carl W. Koors, Harrison, both of Ohio, assignors to Cincinnati Incorporated, Cincinnati, Ohio

Filed Oct. 24, 1984, Ser. No. 664,243
Int. Cl.[4] B21D *9/05*
U.S. Cl. 72—389 **14 Claims**



1. A deflection compensating means for use with a press brake of the type having a bed and a ram with opposed die-supporting edges, cooperating dies operatively mounted on said edges, and means operatively connected to said ram to shift said ram away from said bed and toward said bed against a workpiece supported on said bed die, whereby said bed and ram are placed under load resulting in opposite deflections of said bed and ram and non-parallelism of said die-supporting edges, said deflection compensating means being located between said die-supporting edge and said die of a selected one of said bed and ram and extending the length of said die-supporting edge, said deflection compensating means comprising a variable rate spring means having a deflection when subject to a uniformly distributed load and when added to said deflections of said bed and ram yielding a total deflection which is constant along the length of said bed and ram, said deflection of said variable rate spring means is proportional to the bend-

ing load so that said variable rate spring means automatically compensates for any variation in bending load, whereby said die-supporting edge on said deflection compensating means is substantially parallel to the other of said die-supporting edges when under a uniformly distributed load.

4,620,436

METHOD AND APPARATUS FOR CALIBRATING TRANSFORMATION MATRIX OF FORCE SENSOR

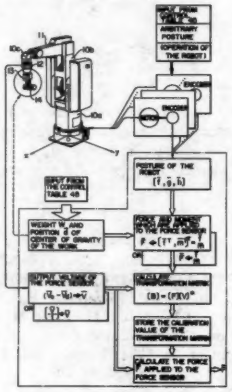
Hisaaki Hirabayashi, Yokohama; Koichi Sugimoto, Hiratsuka; Shinichi Arai, Yokohama; Tomoyuki Masui, Yokohama, and Hidetoshi Inaba, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 4, 1985, Ser. No. 784,502

Claims priority, application Japan, Oct. 9, 1984, 59-210435; Jun. 5, 1985, 60-120416

Int. Cl.[4] G01L *25/00*

U.S. Cl. 73—1 B 2 Claims


ARBITRARY POSITION
OPERATION OF THE ROBOT
ENCODER
ENCODER
POSTURE OF THE ROBOT
INPUT FROM THE CONTROL TABLE 48
WEIGHT W, AND POSITION S OF CENTER OF GRAVITY OF THE WORK
STORE THE CALIBRATION VALUE OF THE TRANSFORMATION MATRIX
CALCULATE THE FORCE APPLIED TO THE FORCE SENSOR

1. A method of calibrating a transformation matrix of a force sensor, comprising the steps of:

attaching a force sensor responsive to n-dimensions ($n \geqq 3$) between a wrist portion and a hand portion constituting at least two operating elements of a robot;

using said hand portion to hold a standard work whose mass and center of gravity are known;

making respective operating elements and respective driving sources of said robot operative for driving said wrist portion in response to commands from a control unit and thereby sequentially changing the posture of said force sensor attached to the robot to apply to said force sensor n or more sets of linear independent forces and another force;

obtaining a composite force consisting of a force component and a moment component through an arithmetic operation performed by the control unit on the basis of posture and position information about the force sensor derived from signals provided by encoders detecting operational values for each operating element of the robot and from the mass and the centers of gravity of said standard work and said hand portion;

receiving at said control unit a strain voltage detected by said force sensor;

using said control unit to calculate a transformation matrix including an offset value, for the force sensor from said composite force obtained and from the strain voltage received, in accordance with a predetermined arithmetic logic equation and then storing said transformation matrix into memory means; and

calibrating the transformation matrix of the force sensor.

4,620,437

GAS SENSOR

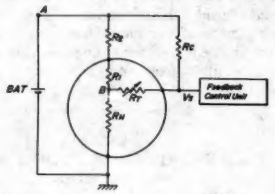
Akio Takami; Toshitaka Matsuura; Toshifumi Sekiya, and Yoshiaki Kuroki, all of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Apr. 23, 1985, Ser. No. 726,369

Claims priority, application Japan, Apr. 25, 1984, 59-83379

Int. Cl.[4] G01N *27/12*

U.S. Cl. 73—23 2 Claims



1. A gas sensor, comprising a ceramic substrate; a heater circuit with a first terminal and a second terminal at opposite ends thereof, said heater circuit being mounted on said substrate and having a heat-generating portion and a voltage-dividing portion connected to said second terminal; a gas-sensitive element disposed on said substrate in juxtaposition to said heat-generating portion; a first electrode and a second electrode buried in said gas-sensitive element with a spacing therebetween, said first electrode connected to a third terminal on said substrate, said second electrode connected to boundary between said heat-generating portion and said voltage-dividing portion; and a resistive lead wire element connected to said second terminal, resistance of said resistive lead wire element being such that a heater voltage across said resistive lead wire element and said heater circuit is divided so as to provide a suitable sensor voltage at said boundary for measuring resistance of said gas-sensitive element.

4,620,438

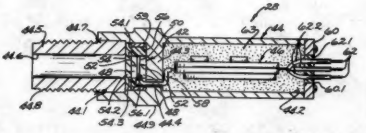
CYLINDER PRESSURE TRANSMITTER FOR AN INTERNAL COMBUSTION ENGINE

Wei-Yean Howng, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 15, 1983, Ser. No. 561,842

Int. Cl.[4] G01L *23/22*

U.S. Cl. 73—35 5 Claims



1. A device for providing an electrical signal to a remote location corresponding to pressure in a cylinder of an internal combustion engine during engine operation comprising a piezoelectric element for generating an electrical signal in response to application of pressure, and means for mounting the piezoelectric element at the location of a cylinder of an internal combustion engine to be responsive to variations of pressure in the cylinder during engine operation, characterized in that the piezoelectric element is ceramic; in that the mounting means comprise a metal body having a bore at one end of the body and a metal diaphragm means for protecting the piezoelectric element from the environment in an internal combustion engine cylinder while transmitting pressure force to the piezoelectric element, the bore being open at one bore end and having a support section of the body positively located on the body at an opposite bore end and receiving the piezoelectric

element, and the metal diaphragm means being disposed in a selected position on the body for closing the open bore end and compressing the ceramic piezoelectric element against the metal body support section with a selected preload compressive force and being welded to the body to secure the diaphragm means in said selected position, the mounting means having screw threads threadly attachable to an engine for disposing the diaphragm means compressing said piezoelectric element in sealed relation to a cylinder of an internal combustion engine to be accessible to pressure in the cylinder and to be responsive to variations of pressure including subatmospheric variations of pressure in the cylinder during engine operation to generate an initial electrical signal in the piezoelectric element accurately representative of pressure in the cylinder; and in that electronic means having active and passive components which include a capacitor are operable at the relatively high temperature likely to be encountered at a location immediately adjacent a cylinder of an internal combustion engine during engine operation and are carried on the metal body of the mounting means to be disposed at such an adjacent location, the electronic means being electrically connected to the piezoelectric element for receiving and amplifying said initial electrical signal at such a location on the mounting means, the piezoelectric element and said electronic means and the electrical connection therebetween being electromagnetically shielded on the mounting means to facilitate accurate conditioning of the initial electrical signal for accurate transmission to a location remote from the engine cylinder.

4,620,439

METHOD FOR DETERMINING BOREHOLE OR CAVITY CONFIGURATION THROUGH INERT GAS INTERFACE

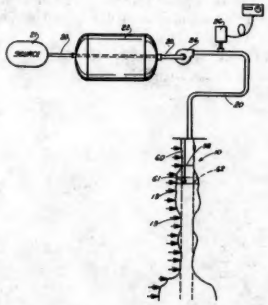
Donald Faul, Sunset; Paul P. Broussard, Lafayette, and Donald W. Granger, Lake Charles, all of La., assignors to Testrac, Inc., Lake Charles, La.

Continuation-in-part of Ser. No. 599,290, Apr. 11, 1984, Pat. No. 4,523,453, which is a continuation-in-part of Ser. No. 390,321, Jun. 21, 1982, Pat. No. 4,455,869. This application Dec. 3, 1984, The portion of the term of this patent subsequent to Nov. 19, 1997, has been disclaimed.

Ser. No. 677,699

Int. Cl.[4] G01M *3/00*

U.S. Cl. 73—40.7 **3 Claims**



1. A method of determining the configuration of a borehole or cavity, which comprises the following steps:

a. providing a flow of relatively inert fluid under a known pressure and known temperature;

b. providing flow meter means for quantifying the weight of the flow of relatively inert fluid to be introduced into the borehole or cavity as a direct mass measurement;

c. flowing a known weight of said fluid into the borehole or cavity to be configured;

d. monitoring the weight of said fluid contained within the borehole or cavity between certain measured intervals within said cavity; and

e. determining the area occupied by said fluid within at least one of said intervals with the cavity as a function of said weight of inert fluid under the known pressure and temperature within that interval.

4,620,440

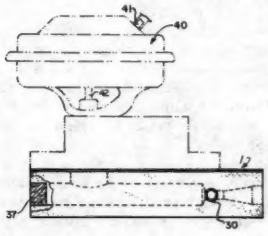
EGR VALVE TEST FIXTURE

Vernon F. Thompson, Crestwood, Mo., assignor to Tomco, Inc., St. Louis, Mo.

Filed Sep. 9, 1985, Ser. No. 773,460

Int. Cl.[4] G01M *19/00*

U.S. Cl. 73—118.1 **7 Claims**



6. A test fixture for EGR valves having a flat mounting surface and a vacuum fitting communicating with a chamber on an upper side of a diaphragm movable in response to a predetermined vacuum, said fixture comprising a support in the form of a rectangular block of plastic material, with flat upper and lower surfaces and side and end surfaces joining the boundaries of said upper and lower surfaces, a well, opening through said upper surface and extending short of said lower surface, said well being positioned inboard of said side and end surfaces; a conduit in the form of a two-ended straight passage communicating at one end with the atmosphere and communicating with said well intermediate the length of said passage; a venturi tube in the form of a passage opening through the opposite end of said block and having a throat portion axially alligned with and communicating with the other end of said conduit and an aspirating line passage communicating at one end with said throat portion and at its other, with an aspirating line for communicating with the vacuum fitting of said EGR valve.

4,620,441

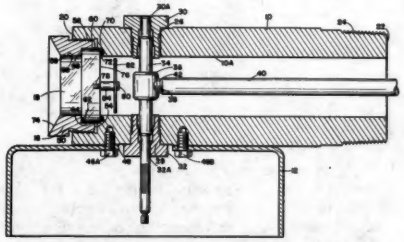
LIQUID LEVEL CONTROL

David L. Hendrickson, Tulsa, Okla., assignor to Custom Engineering & Mfg. Co., Tulsa, Okla.

Filed Dec. 23, 1983, Ser. No. 565,046

Int. Cl.[4] G01F *23/02, 23/30*

U.S. Cl. 73—327 **2 Claims**



1. A liquid level control responsive to the level of liquid in a vessel, comprising:

a tubular body having a tubular axis and having a forward

end and a rearward end and including means at the rearward end for attachement to an opening in said vessel, the tubular body having aligned openings on diametrically opposite sides thereof adjacent to and spaced from the forward end, the axis of each opening being perpendicular to the tubular axis of said body and intersecting therewith at one location;

a control has mounted on one side of said body, the control box having an opening therein coincident with one of said body openings;

a pivot shaft sealably and rotatably mounted in said aligned openings in said body, one end of said pivot shaft extending within said control box;

an arm having a first and second end and having said first end attached to said pivot shaft within said tubular body and extending transverse said pivot arm, said first end being attached adjacent said one location, said second end of said arm extending past said body rearward end to extend within said vessel to which the tubular body is attached;

a float secured to said second end of said arm, the float being elevationally responsive to the level of liquid within said vessel to which the body is attached, elevational changes in said level of liquid within the vessel serving to rotate said pivot shaft;

control means within said control box responsive to the pivotation of said shaft to provide a control signal responsive to the fluid level within said vessel;

a single transparent sight glass having an inner and an outer surface, the sight glass sealably closing said tubular body forward end, said sight glass being spaced from and adjacent said pivot shaft and providing visual indication of said level of fluid within said vessel; and

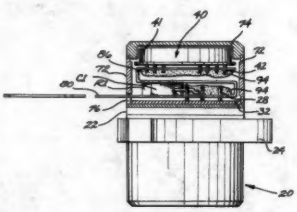
a relatively thin reflector plate secured within said tubular body to said sight glass inner surface and spaced from said inner surface by a spacer, the reflector plate being observable through said sight glass whereby the level of fluid is visually detectable, said sight glass and said reflector plate having a central axis substantially co-axial with said tubular axis.

4,620,442

DIGITAL ACCELEROMETER

Douglas C. MacGugan, Issaquah; Ronald B. Leonardson, Redmond, and William W. Sand, Kirkland, all of Wash., assignors to Sundstrand Data Control, Inc., Seattle, Wash.

Filed Jun. 14, 1984, Ser. No. 620,441
Int. Cl.[4] G01P *15/08*
U.S. Cl. 73—517 R **7 Claims**



1. A digital accelerometer comprising:

a linear analog accelerometer comprising a first self-contained modular unit enclosed within a housing and a conductor extending from within the housing to a point outside the housing, the analog accelerometer being adapted to produce on the conductor a first analog signal representing the linear acceleration of the analog accelerometer along one axis thereof;

a casing positioned against the housing so as to form a substantially enclosed space between a portion of the housing adjacent the conductor and the casing;

an interface circuit located within the enclosed space for receiving the first analog signal and producing a second analog signal having a magnitude corresponding to the magnitude of the first analog signal, the interface circuit comprising one or more electrical components mounted such that the components are accessible when the casing is separated from the housing;

a digitizer comprising a second self-contained modular unit located within the enclosed space for receiving the second analog signal and producing a corresponding digital signal; and

connector means for conveying signals between the analog accelerometer, interface circuit, digitizer and a location outside the enclosed space and the housing, the connector means comprising a single, continuous flexible strip of insulating material having embedded therein a plurality of conductive strips, the flexible strip passing through an opening in the casing, the flexible strip further including first, second and third sets of terminals positioned at spaced apart locations along the length of the flexible strip, the first set of terminals being located outside the casing and being adapted for connecting the digital accelerometer to an external device, the second and third sets of terminals being located inside the casing and being connected to the analog accelerometer and digitizer, respectively;

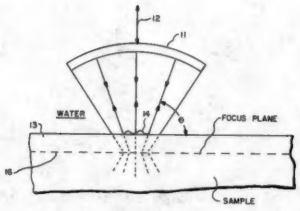
whereby the first and second modular units are maintained in close thermal contact with one another during operation of the digital accelerometer, and whereby the dynamic range of the digital accelerometer can nevertheless be readily modified by separating the casing from the housing and modifying said one or more components.

4,620,443

LOW FREQUENCY ACOUSTIC MICROSCOPE

Butrus T. Khuri-Yakub, Palo Alto, Calif., assignor to The Board of Trustees of The Leland Stanford Junior University, Stanford, Calif.

Filed Dec. 13, 1984, Ser. No. 681,229
Int. Cl.[4] G01N *29/04*
U.S. Cl. 73—606 **4 Claims**

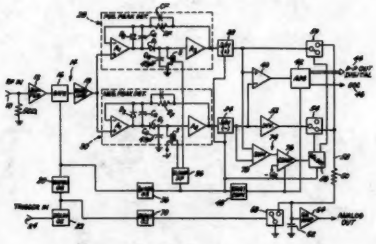


1. The method of detecting and isolating near-surface flaws, inclusions or voids in a solid sample which comprises: directing a focused beam of acoustic energy at the sample with its focal plane at the subsurface flaw, inclusion or void location; scanning the sample with the beam; detecting acoustic energy specularly reflected and mode converted at the surface of the sample and acoustic energy reflected by subsurface flaws, inclusions or voids at the focal plane and generating an interference signal; and processing said signal and forming a signal indicative of the subsurface flaws, inclusions or voids.

4,620,444
HIGH SPEED GATED PEAK DETECTOR

John D. Young, Rexford, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 15, 1984, Ser. No. 660,826
Int. Cl.[4] G01N *29/04*
U.S. Cl. 73—606 20 Claims



1. Peak detector apparatus comprising:

first detector means for detecting the peak positive value of an input waveform within a preselected period of time and for providing a first signal corresponding to the peak positive value;

second detector means for detecting, within said preselected period time, the peak negative value of the input waveform and for providing a second signal corresponding to the peak negative value;

gate means connected to the first and second detector means for supplying the input waveform in parallel to both detector means during said preselected period of time;

means responsive to the first and second signals for determining the peak-to-peak value of the waveform and for providing a third signal representative of the peak-to-peak value;

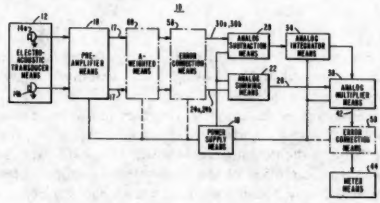
means for comparing the first and second signals to detect which signal is the larger; and

selector means responsive to the comparing means for providing a fourth signal corresponding to the larger of said first and second signals.

4,620,445
PORTABLE ACOUSTIC INTENSITY MEASURING DEVICE

Francis S. McKendree, Wilkinsburg, and John M. Zomp, North Huntingdon, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 19, 1984, Ser. No. 663,010
Int. Cl.[4] G01H *3/12*
U.S. Cl. 73—647 2 Claims



1. A portable acoustic intensity measuring device comprising:

(a) electroacoustic transducer means comprising a pair of electroacoustic transducers positioned at a predetermined distance from one another, a first of said electroacoustic transducers for producing a first electrical analog signal representative of the sound pressure at said first electroacoustic transducer and a second of said electroacoustic transducers for producing a second electrical analog signal representative of the sound pressure at said second electroacoustic transducer;

(b) preamplifier means connected in circuit with said electroacoustic transducer means for amplifying said first and second electrical analog signals by a predetermined gain, said preamplifier means having output means, said preamplifier means for producing first and second preamplified sound pressure analog signals at said preamplifier means output means;

(c) analog summing means connected in circuit with said preamplifier output means, said summing means comprises first and second input means for receiving said first and second preamplified sound pressure analog signals, said summing means having output means, said summing means for producing at said summing output a summed analog output signal representative of the average of the sum of said first and second preamplified sound pressure analog signals;

(d) analog subtraction means connected in circuit with said preamplifier output means, said analog subtraction means comprises first and second input means for receiving said first and second preamplified sound pressure analog signals, said analog subtraction means having output means, said analog subtraction means for producing at said subtraction means output a difference analog output signal representative of the difference of said first and second preamplified sound pressure analog signals;

(e) analog integrator means having input means connected in circuit with said subtraction output means, said analog integrator means having output means, said analog integrator means for producing at said analog integrator output means an integrated analog signal representative of the particle velocity midway between said electroacoustic transducers;

(f) analog multiplier means having first and second input means, said first multiplier input means connected in circuit with said summing output means, said second multiplier input means connected in circuit with said integrator output means, said analog multiplier means having output means, said analog multiplier for multiplying said summed output signal together with said integrated output signal, and producing an acoustic intensity signal at said multiplier output representative of an acoustic intensity vector midway between said electroacoustic transducers;

(g) meter means connected in circuit with said multiplier output means for receiving said acoustic intensity signal, said meter means including visual display means responsive to said acoustic intensity signal for visually indicating said acoustic intensity vector;

(h) power supply means for supplying power for said acoustic intensity device;

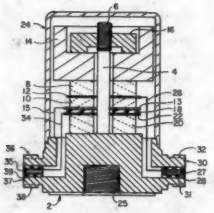
(i) error correction means connected in circuit with said preamplifier means and said meter means, said error correction means including switching means comprising a first switching means connected in circuit with said preamplifier means and said summing means and said subtraction means and a second switch means connected in circuit with said multiplier means and said meter means for simultaneously switching said first and second preamplified analog signals at said summing input means and said subtraction input means and for simultaneously switching the polarity of said acoustic intensity signal at said meter means.

4,620,446

ACCELERATION RESPONSIVE TRANSDUCERS

Jorgen Jensen, Gentofte, Denmark, and Gregory C. Michel, Framingham, Mass., assignors to Bruel & Kjaer Instruments, Inc., Marlborough, Mass.

Filed Dec. 31, 1984, Ser. No. 687,943
Int. Cl.[4] G01H *1/00*
U.S. Cl. 73—652 22 Claims



1. A device for monitoring the condition of a selected apparatus comrpising:

a base;

a primary piezoelectric transducer capable of generating an output electrical signal in response to mechanical vibrations of said selected apparatus;

an auxiliary piezoelectric transducer capable of generating mechanical vibrations in response to an electrical input signal;

said primary and auxiliary transducers being characterized by PZ elements that form part of both said primary and auxiliary transducers;

means including a separately formed fastener member attached to said base for mounting said primary and auxiliary piezoelectric transducers to said base;

first and second terminal means carried by said base;

first connecting means for providing an electrical connection between said first terminal means and said auxiliary piezoelectric transducer; and

second connecting means for providing an electrical connection between said second terminal means and said primary piezoelectric transducer;

said primary and auxiliary transducers being arranged so that when said auxiliary piezoelectric transducer is caused to vibrate as a consequence of application of an electrical input signal to said first terminal means, the mechanical vibrations of said auxiliary piezoelectric transducer will be imparted to said primary piezoelectric transducer so as to cause said primary piezoelectric transducer to generate an output electrical signal at said second terminal means if said primary piezoelectric transducer is operative.

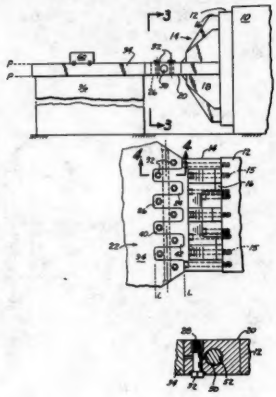
4,620,447

SINGLE PIN, UNIPLANAR DRIVER BAR ASSEMBLY

David V. Kimball, Monrovia, Calif., assignor to Kimball Industries, Inc., Monrovia, Calif.

Filed Apr. 24, 1985, Ser. No. 726,469
Int. Cl.[4] G01N *29/00*
U.S. Cl. 73—662 22 Claims

1. A driver bar assembly for coupling together a shaker head and a slip plate carrying a test piece to be vibration tested, said assembly comprising a driver bar having a laterally extended locus of intersection with said slip plate in the slip plate plane of test movement and fastener means comprising a rigid pin extending laterally within said locus of intersection in slip plate and bar interconnecting relation, and means to tighten said



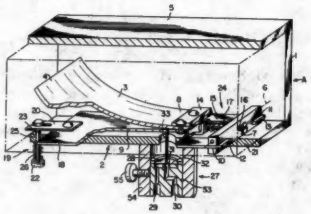
assembly in said relation for transmission of shaker head vibration to said slip plate through said pin.

4,620,448

ARRANGEMENT FOR MEASURING THE RATE OF FLOW OF A GASEOUS OR LIQUID MEDIUM THROUGH A HOUSING

Kurt Obliänder, Kernen; Jörg Abthoff, Plüderhausen; Hans-Dieter Schuster, Schorndorf, and Karlwalter Schmidt, Weinstadt, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 25, 1985, Ser. No. 715,247
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1984, 3410991
Int. Cl.[4] G01F *1/28*
U.S. Cl. 73—861.71 22 Claims



1. an arrangement for measuring the rate of flow of a gaseous or liquid medium through a housing, such as an intake pipe for an internal-combustion engine, comprising:

fluid measuring means, movably disposed in the housing and displaceable in proportion to an amount of medium flowing through the housing, said measuring means extending in the flow direction of the medium and being pivotably mounted to the housing at an upstream end adjacent to a first wall of the housing, and wherein said measuring means includes a leaf spring having an upstream end adjacent said first wall and a downstream free end adjacent an opposing second wall of the housing when said measuring means is in a closed position, whereby the flowing medium acts on the leaf spring to cause rotation of said measuring means; and

control valve means, arranged in a control pipe adjacent said

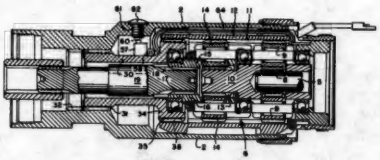
housing for metering a control medium in proportion to the amount of medium flowing through the housing, said valve means having a movable part in operable contact with said fluid measuring means and being responsive to displacement of said fluid measuring means, to control metering of the control medium.

4,620,449

PORTABLE AIR TOOL HAVING BUILT IN TRANSDUCER AND CALIBRATION ASSEMBLY

John A. Borries, Chardon; Earl E. Rush, Mentor, and William S. Washeim, Seven Hills, all of Ohio, assignors to The Rotor Tool Company, Cleveland, Ohio

Filed Apr. 23, 1985, Ser. No. 726,061
Int. Cl.[4] B25B *23/145*
U.S. Cl. 73—862.21 **15 Claims**



1. A portable air tool with built in transducers and calibration assembly comprising a housing, a motor in the housing having an output shaft, a gear reduction assembly coupled to the motor output shaft to transmit torque to a workpiece, said gear reduction assembly including a ring gear, a torque body having a splined connection at one end to the housing and a splined connection of the other end to the ring gear, a transducer and calibration assembly mounted on said torque body in said housing and including input and output lead lines passing from the housing to an electrical circuit containing a power supply and an output monitoring device, said housing having an aperture in alignment with the contained calibration assembly selectively allowing access to the enclosed calibration assembly to permit the transducer to be balanced in unloaded condition by adjusting the calibration assembly until a balanced condition is displayed on the output monitoring device.

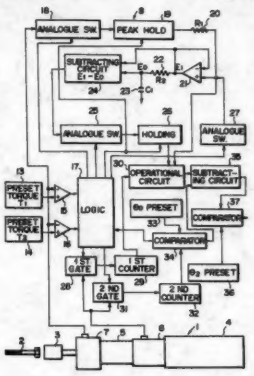
4,620,450

METHOD OF EVALUATING TIGHTENING CONDITION OF SCREW

Ikuo Yamaguchi, Hiroshima, Japan, assignor to Mazda Motor Corporation, Japan

Filed Aug. 5, 1985, Ser. No. 762,337
Claims priority, application Japan, Aug. 7, 1984, 59-165149
Int. Cl.[4] B23P *19/06*
U.S. Cl. 73—862.23 **3 Claims**

1. A method of evaluating the tightening condition of a screw member tightened in plastic tightening by a nut runner means, comprising steps of tightening a screw member with a nut runner, detecting the turning angle of the screw member and the tightening torque, imparted to the same, calculating the ratio of increase in torque to increase in the tightening turning angle in the elastic range, terminating tightening of the screw member when the force imparted to the screw member exceeds the elastic limit of the screw member and reaches a predetermined tightening point in the plastic range, detecting the total tightening turning angle and the final tightening torque upon termination of the tightening, calculating the elastic tightening turning angle portion of the total tightening turning angle on the basis of the final tightening torque and the ratio of increase in torque to increase in the tightening turning angle in the elastic range, calculating the plastic tightening turning angle portion of the total tightening turning angle by subtracting the elastic tightening turning angle portion from the total tightening turning angle and comparing the plastic



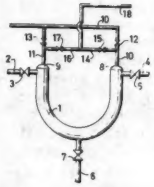
tightening turning angle portion thus obtained with a preset tolerance range to evaluate the tightening.

4,620,451

CELLULOSE PULP SAMPLING AND CLEANING DEVICE

Kjell A. Malmgren, Husum, Sweden, assignor to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Filed Oct. 30, 1984, Ser. No. 666,518
Claims priority, application Sweden, Nov. 1, 1983, 8305989
Int. Cl.[4] G01N *1/00*
U.S. Cl. 73—863.24 **6 Claims**



1. A closed cellulose pulp fiber sampling and cleaning device for direct fluid flow connection to a flow of cellulose pulp for withdrawing and preparing clean pulp fiber samples for automatic analysis of cellulose pulp fiber properties, comprising:

(a) a pulp sample receptacle having

(i) a housing;

(ii) an elongated pulp fiber sample chamber in the housing, having a central portion, and end portions communicating with and on opposite sides of the central portion, the central portion being lower than either end portion, and having an opening at each end portion;

(iii) liquid-permeable and pulp fiber-impermeable material covering each opening at each end portion;

(iv) ports in the housing communicating with the chamber in the lower central portion intermediate the two end portions and with each end portion of the chamber on the outside of the liquid-permeable pulp fiber-impermeable material; and

(v) valves controlling flow through the ports;

(b) means for introducing and withdrawing washing liquor through the ports at each end of the chamber;

(c) means for introducing and withdrawing pulp fiber suspension and withdrawing cleaned pulp fibers through the ports intermediate the two ends; and

(d) means for closing and opening the valves in synchroniza-

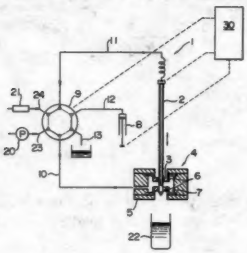
tion with each other for the alternate supply of washing liquor and removal of contaminated washing liquor, respectively.

4,620,452

LIQUID SAMPLE INJECTING APPARATUS

Hideo Seki, Ibaraki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 10, 1985, Ser. No. 774,472
Claims priority, application Japan, Sep. 21, 1984, 59-199255
Int. Cl.[4] G01N *35/04*
U.S. Cl. 73—864.21 **4 Claims**



1. In a liquid sample injecting apparatus comprising a sample needle movable between a lower position in which a liquid sample is drawn by suction into the sample needle and an upper position in which the liquid sample is injected into a column, connection means for introducing a carrier solvent into the sample needle, and valve means for switching the direction of flow of the carrier solvent, the improvement wherein:

said connection means comprises a housing member and a pair of seal members defining a pressure chamber, each said seal member being annular in shape and formed in a central portion thereof with an opening allowing the sample needle to extend therethrough; and a surface of the seal members in contact with the carrier solvent at which the carrier solvent is located radially outwardly of the seal members is greater in area than a surface of the seal members in contact with the carrier solvent at which the carrier solvent is located radially inwardly of the seal members, whereby the seal members are forced, when a high pressure of the carrier solvent is present in the pressure chamber, by the high pressure of the carrier solvent to press against the sample needle so as to positively provide a seal to an outer peripheral surface of the sample needle, and the high pressure of the carrier solvent in the pressure chamber is removed therefrom, when the sample needle is to be moved, by actuating the valve means to reduce the pressure applied by the seal members to the sample needle.

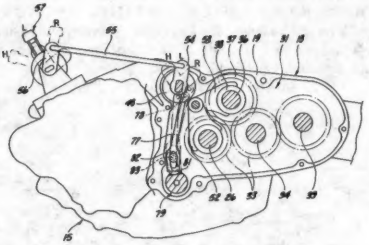
4,620,453

SHIFT CONTROL DEVICE OF VEHICULAR TRANSMISSION

Toshiharu Kumazawa, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Hamamatsu, Japan

Filed Jul. 12, 1985, Ser. No. 754,527
Claims priority, application Japan, Jul. 13, 1984, 59-144339
Int. Cl.[4] F16H *57/06*; **G05G** *5/10*
U.S. Cl. 74—476 **8 Claims**

1. A shift interlock between a primary transmission having an input shaft, an output shaft and first shifting means for controlling the rotational relationship between said input shaft and said output shaft, said first shifting means comprising a first shifting drum supported for rotation about a first axis and means responsive to the rotation of said first shifting drum for changing the rotational relationship between said input shaft and said output shaft, an auxiliary transmission having an input shaft driven by said primary transmission output shaft and an output shaft and second shifting means for controlling the rotational relationship between said input shaft and said output shaft of said auxiliary transmission, said second shifting means comprising a second shifting drum supported for rotation about a second axis and means responsive to the rotation of said second shifting drum for changing the rotational relationship between said input shaft and said output shaft of said auxiliary transmission, said interlock comprising a link pivotally connected at one end to one of said shifting drums at a position offset from the rotational axis of said one shifting drum, means for retaining the movement of the other end of said link in a generally reciprocating fashion adjacent the other of said shifting drums, and cam means on said other shifting drum for precluding rotation of said other shifting drum when said link end is in a position for establishing a certain rotational relationship between the input and output shafts of its associated transmission.

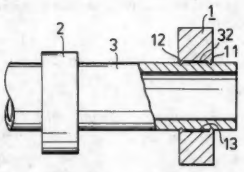


4,620,454

JOINT STRUCTURE OF TUBULAR MEMBER AND ANNULAR PART

Toshiyasu Sugiuchi, Tokyo; Susumu Aoyama, Chiba, and Toshio Yoshida, Saitama, all of Japan, assignors to Riken Corporation, Tokyo, Japan

Division of Ser. No. 514,474, Jul. 18, 1983, Pat. No. 4,575,913.
This application Oct. 25, 1985, Ser. No. 778,672
Claims priority, application Japan, Jul. 19, 1982, 57-125330
Int. Cl.[4] F16H *53/00*
U.S. Cl. 74—567 **12 Claims**



1. A joint structure of a metallic tubular member and metallic annular parts, said annular parts being joined to the outer periphery of said tubular member, wherein each of said annular parts has around its inner periphery at least one serrated portion which cuts into the outer periphery of the tubular member when they are joined, said annular part also having a planar portion facing another portion of the tubular member in such a manner that substantially no pressure is exerted on said planar portion of the annular part.

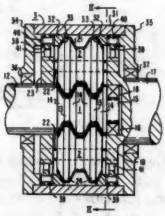
5. The joint structure according to claim **1** wherein the serrated portion consists of a series of substantially tooth-shaped protuberances, knurling, or the like.

4,620,455

TRACTION ROLLER TRANSMISSION

Charles E. Kraus, Austin, Tex., assignor to Excelermatic Inc., Austin, Tex.

Filed Feb. 8, 1985, Ser. No. 699,835
Int. Cl.[4] F16H *13/06, 13/00, 13/02*
U.S. Cl. 74—798 6 Claims



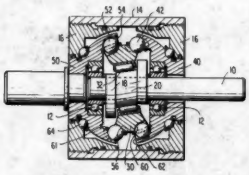
1. A planetary type traction roller transmission comprising a traction ring structure having traction rings with opposite conically inclined side surfaces, a sun roller centrally disposed within the traction ring structure and having at least two annular grooves with inclined side faces forming hard lubricated traction race surfaces with a diameter smaller than said traction ring structure so as to form an annular space therebetween, planetary traction rollers supported in the space between the sun roller and the traction ring structure and having at least two annular projections with inclined inner and outer surfaces extending into the grooves of said sun roller so as to be engaged by the side surfaces thereof, said traction ring structure including traction rings arranged at opposite sides of said planetary rollers and having conical side faces adjacent the outer inclined side surfaces of said planetary rollers and means for forcing said traction rings toward one another so as to cause firm engagement of the conical surface thereof with the outer of said inclined side surfaces of the planetary rollers during operation of the transmission, with said planetary traction rollers having fewer of their traction side surfaces engaged with said traction ring than with said sun roller.

4,620,456

NUTATING DRIVE MECHANISMS HAVING SPHERICAL BALL DRIVING ELEMENTS

Robert Distin, Louisville, and James E. Shaffer, Longmont, both of Colo., assignors to Advanced Energy Concepts '81, Limited, Boulder, Colo.

Filed Oct. 18, 1982, Ser. No. 434,972
The portion of the term of this patent subsequent to Apr. 29, 2003, has been disclaimed.
Int. Cl.[4] F16H *1/28*
U.S. Cl. 74—800 11 Claims



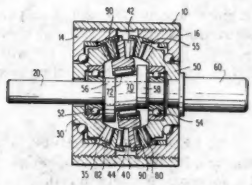
1. A nutating gear reduction mechanism, comprising: a stator, an output member and an intermediate member, said intermediate member being mounted for nutating movement, and rolling elements transmitting torque between said stator and said intermediate member and from said intermediate member to said output member, respectively, said stator, output member and intermediate member being provided with rolling element engaging surfaces, a first set of rolling elements operating between said stator and said intermediate member, and a second set of rolling elements operating between said intermediate member and said output member, said first and second sets of rolling elements comprising spherical balls, each of said balls being in substantially continuous, rolling contact with two of said engaging surfaces.

4,620,457

NUTATING DRIVE MECHANISMS HAVING ROLLER DRIVING ELEMENTS

Robert Distin, Louisville, and James E. Shaffer, Longmont, both of Colo., assignors to Advanced Energy Concepts '81, Limited, Boulder, Colo.

Filed Oct. 18, 1982, Ser. No. 434,971
The portion of the term of this patent subsequent to Apr. 29, 2003, has been disclaimed.
Int. Cl.[4] F16H *1/28*
U.S. Cl. 74—800 13 Claims



1. A speed reduction gearing mechanism of the nutating type, comprising: a stator, an output member, and an intermediate member, said intermediate member being mounted for nutational motion with respect to a central axis thereof, and capable of rotating independently of said nutation, and a plurality of torque transmitting roller elements arranged between said stator and said intermediate member, said roller elements following paths of substantially trochoidal curvature during the transmission of torque, said stator and said intermediate member being formed with first and second surfaces, respectively, for engaging said roller elements, said first and second surfaces being formed with substantially trochoidal curvature so that each of said roller elements bears continuously upon both said first and second surfaces.

4,620,458

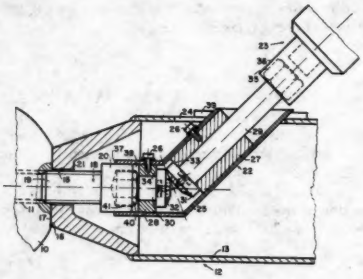
APPARATUS FOR SCREWING IN SET SCREWS, WHICH CAN BE OPERATED BY A WRENCH

Reinhard Schmidek, Würzburg, Fed. Rep. of Germany, assignor to Mero-Raumstruktur GmbH & Co., Würzburg, Fed. Rep. of Germany

Filed May 22, 1985, Ser. No. 736,759
Claims priority, application Fed. Rep. of Germany, May 22, 1984, 8415532[U]
Int. Cl.[4] B25B *17/00*
U.S. Cl. 81—57.28 8 Claims

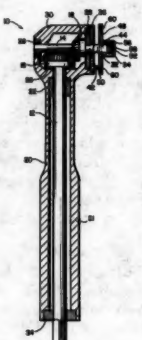
1. Screwing-in apparatus for set screws which can be operated by a wrench, for the connection of hollow rod elements with junction members of a framework, in which the junction members have threaded bores to receive the set screws and the rod elements have end members with middle bores for the passage of the shanks of the set screws, of which the heads can be applied on inside shoulders of the end members for positioning, and a tubular element is provided, which extends inwardly from an opening in the wall of the rod element and opens axially parallel to the middle bore in the end member, in order to guide drive elements of the screwing-in apparatus disposed therein, characterized in that a tubular curved element (25) forms a guide member for the screwing-in apparatus (22), in the rod element (12), in which drive means are rotatable and axially immovable, in that the inner end of the tubular element

(25) is configured as a plug holder for the set screw (18), and in that a guide part (39) with a curved section corresponding to the exterior surface of the rod element (12) is mounted on the



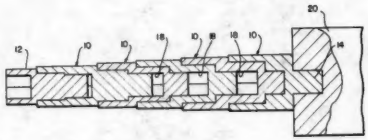
outer end of tubular element (25), said guide part being engagable with the exterior surface of the rod element and being slidable thereon to align the set screw (18) with the end member bore and threaded bore in the junction member.

4,620,459
SPEED SOCKET WRENCH
Robert P. Singleton, Birmingham, Ala., assignor to Sidewinder Products Corporation, Birmingham, Ala.
Filed Jun. 20, 1985, Ser. No. 746,673
Int. Cl.[4] B25B *17/00*
U.S. Cl. 81—57.29 **7 Claims**



1. A speed socket wrench comprising: an elongated casing; a gear shaft mounted coaxially within said casing; a bevel gear mounted on one end of said gear shaft; a handle member mounted on the other end of said gear shaft; a pinion shaft mounted in said casing adjacent said bevel gear and extending perpendicular to said gear shaft; a bevel pinion mounted on one end of said pinion shaft in engagement with said bevel gear; a drive shaft mounted on said bevel pinion so as to be coaxial with said pinion shaft and extending outwardly from said casing; a first cap member mounted on said casing and having an opening through which said drive shaft extends; a second cap member mounted on said drive shaft and axially movable relative to said drive shaft, said second cap member being rotationally fixed relative to said drive shaft and having a drive stud portion for engagement with a socket; and means for releasably locking said second cap relative to said first cap to prevent rotation of said drive shaft.

4,620,460
SOCKET SET
Frank Gonzales, Jr., 33657 Arrowhead, Westland, Mich. 48185
Filed Jul. 1, 1985, Ser. No. 750,452
Int. Cl.[4] B25B *13/06*
U.S. Cl. 81—124.4 **1 Claim**



1. A socket set which comprises a plurality of socket members, each of said plurality of socket members including a different sized socket end with each of said plurality of sockets members having a shank end of the same size and shape,

said plurality of socket members including a smallest sized socket member, a largest sized socket member, and intermediate sized socket members,

said smallest sized socket member having a socket end with the same size and shape as said shank end, with a middle section between said socket end and said shank end,

each of said intermediate sized socket members and said largest sized socket member having a middle section including an axially aligned inset extending from said socket end toward said shank end with said inset having the same size and shape as said shank end,

each of said intermediate sized socket members and said smallest sized socket member having their middle section with an outside surface dimension and shape the same dimension and shape as the socket end of the next larger sized socket end,

whereby the shank end of any of said plurality of socket members will fit into a drive means as well as into the socket end of said smallest sized socket member, and the shank end of any of said plurality of socket members will fit through the socket end of any larger sized socket member and into the inset of said larger sized socket member so that an assembly of said plurality of socket members may be formed with a desired sized socket end on an end of said assembly.

4,620,461
SCREW DRIVING TOOL
William J. Hughes, 1021 Rogers Cir. #4, Boca Raton, Fla. 33431, and Franklin R. Wheelock, 1413 S.W. 74th Ave., North Lauderdale, Fla. 33068
Filed Sep. 26, 1985, Ser. No. 780,164
Int. Cl.[4] B25B *13/16*
U.S. Cl. 81—461 **1 Claim**

1. A device for driving a screw having a head with opposite peripheral edges, an elongated slot extending across said head between said opposite peripheral edges, said device comprising:

an elongated cylindrical-shaped body member having a longitudinal axis and an outer cylindrical surface, a shank

cylindrical-shaped portion at one end thereof, and a blade portion at the other end thereof;

said blade portion having a pair of opposite side edges extending in generally the same direction as said longitudinal axis, an end edge extending transversely of said longitudinal axis;

said blade portion further having a flat front face and a flat rear face spaced apart from one another and extending between said side edges and said end edge, the space between said front and rear faces adjacent said end edge being of a predetermined distance which is sized to permit said end edge to fit within said elongated slot of said screw;

a pair of elongated side flanges comprising extensions of said outer cylindrical surface of said body member, and extending along said side edges of said blade portion, said side flanges each having one end forming a tip which protrudes axially beyond said end edge of said blade portion,

said body member, said shank portion, said blade portion, and said side flanges being of unitary construction;

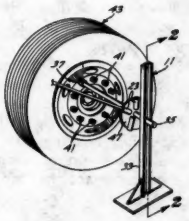
said tips of side flanges also including a flat portion which extends perpendicular to said front and rear faces of said blade portions, said flat portions of said flange tips protruding perpendicularly from only said front face of said blade portion and the other of said flat portions of said flange tips protrudes perpendicularly from only said rear faces of said blade portion, whereby said tips of said flanges will engage said peripheral edges of said screw head when said end edge of said blade portion is within said slot, thereby holding said blade portion against longitudinal movement within said slot.

4,620,462

TOOL FOR REMOVING TRUCK LUG NUTS

Paul Parker, Long Beach, Calif., assignor to Gene Mayes, Compton, Calif., a part interest

Filed Jul. 22, 1985, Ser. No. 757,245
Int. Cl.[4] B25B *23/00*
U.S. Cl. 81—462 **4 Claims**



1. A lug wrench apparatus for turning lug nuts holding a wheel to a hub comprising:

a stand including a base and an upright post, said post being formed with a plurality of vertically spaced apart, horizontal, through openings;

an elongated torque shaft formed on one end with a bearing rod for rotatable receipt in selected ones of said openings and including on its second end a socket member formed with a socket cavity for receipt non-rotatably over said lug nuts;

a torque hub affixed to said torque shaft intermediate said bearing rod and said socket member and including a plurality of radial socket tubes disposed equidistant around said hub in spoke fashion and formed with radially outwardly opening passages;

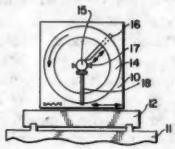
an elongated rigid lever arm formed on one end for removable receipt in said passage and on its opposite end with a lever arm whereby said stand may be positioned in confronting relationship with related ones of said lug nuts, said bearing rod inserted through a selected one of said openings, said socket member fitted over said selected lug nut and said one end of said lever arm fitted in one of said passages such that an operator can apply his weight to said lever handle to directly apply the resultant rotative force to said hub to rotate said torque shaft and said selected lug nut.

4,620,463

PROCESS FOR MACHINING TUBULAR PARTS AND APPARATUS FOR CARRYING OUT THE PROCESS

Laurent Horn, Montrauil Juigné; Jérôme Hautdidier, Avrillé, and Christian Soulet, Ugine, all of France, assignors to Compagnie Europeenne du Zirconium Cezus, Courbevoie, France

Filed Jul. 29, 1985, Ser. No. 760,165
Int. Cl.[4] B23B *1/00, 5/08*
U.S. Cl. 82—1 C **12 Claims**



1. A process for machining a tubular part whose cross sections have circular internal and external circumferences, wherein the wall of said tubular part has an external circumference and an internal circumference which are not coaxial, resulting in varying wall thicknesses, comprising the steps of:

(a) for a particular cross section, determining a reference diameter having one end at the tube surface at the point of maximum wall thickness and the other end at the tube surface at the point of minimum wall thickness, and determining the values of said maximum wall thickness and said minimum wall thickness;

(b) determining the position of the center of the external circumference by locating the middle of the reference diameter;

(c) determining the position of the center of the internal circumference on said reference diameter as spaced from the center of the external circumference in the direction of the minimum wall thickness by a distance equal to half of the difference between the maximum and minimum thicknesses;

(d) fixing said tubular part, and displacing a tool carrier carrying a rotatable machining tool in a direction parallel to the longitudinal axis of said tubular part until aligned with said cross-section, and displacing said tool carrier transverse to said longitudinal axis so that said tool may rotate about an axis passing through the center of said internal circumference;

(e) rotating said tool to describe a circle having as its center the center of said internal circumference at said cross-section, and radially displacing said tool in the direction of its axis of rotation to a desired depth of cut in the wall of said tubular part, and machining said wall until a desired substantially uniform wall thickness is obtained, said substantially uniform wall thickness being at most equal to said minimum wall thickness; and

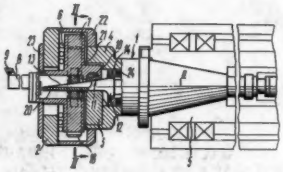
(f) removing said tool

4,620,464

BORING HEAD

Georgy A. Vasilchenko, ulitsa Khersonskaya 1, kv. 103, Moscow, U.S.S.R.

Filed Aug. 15, 1984, Ser. No. 641,014
Int. Cl.[4] B23B *43/00*
U.S. Cl. 82—1.2 3 Claims



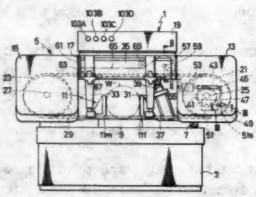
1. A boring head of a multiple-operation machine tool comprising: a rotatable housing; means for rotating said housing; a rotatable carriage accommodated in said housing and having at least one pair of through holes symmetrically provided in said carriage in relation to an axis of rotation of said housing and extending in a perpendicular direction to said axis of rotation, said carriage being spring-biased to radially move in relation to said housing; a cylindrical finger accommodated in said carriage having a first slanted surface; a mandrel for a cutting tool accommodated in said carriage; a rod kinematically coupled to a drive and having a second slanted surface provided on one end of said rod, said second slanted surface of said rod interacting with said first slanted surface of said finger in said carriage and moving said carriage in a radial direction; means for pressing said carriage against said housing; and at least one pair of pins located in said pairs of said through holes, said pins being kinematically coupled to said rod and moveable in forward and backward directions in said holes.

4,620,465

APPARATUS FOR CONTROLLING CUTTING MACHINES

Masayuki Taguchi, Hatano, Japan, assignor to Amada Company, Limited, Japan

Filed May 4, 1984, Ser. No. 607,259
Claims priority, application Japan, May 6, 1983, 58-78205
Int. Cl.[4] B23D *55/06*
U.S. Cl. 83—74 8 Claims



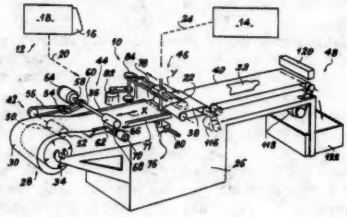
1. A cutting machine, comprising:
a cutting tool for cutting a workpiece;
a plurality of switches, each switch corresponding to a predetermined cutting speed for each of various groups of materials having different machinability qualities; and
a plurality of constant voltage output means, one of each of said constant voltage output means being connected with one of each of said plurality of switches for changing the speed of the cutting tool responsive to said constant voltage output means, said means including a pulley having two pulley halves that can be adjust to create varying pulley diameters.
means for detecting the setting of the speed changing means;
means for comparing a selected preferred cutting speed with the detected setting of the speed changing means;
means for driving the speed changing means in response to the comparing means to set the speed changing means to the selected preferred cutting speed.

4,620,466

CUTTING MACHINE

Jean P. Jumel, Le Vesinet, and Bernard Guala, Courbevoie, both of France, assignors to Societe Nationale Industrielle et Aerospatiale, Courbevoie, France

Filed Oct. 16, 1984, Ser. No. 661,784
Claims priority, application France, Oct. 17, 1983, 83 16466
Int. Cl.[4] D06H *7/00*; B26F *1/26, 3/00*
U.S. Cl. 83—177 10 Claims



1. A machine for cutting strip-like material by means of a high pressure fluid jet, comprising a substantially flat bearing surface for supporting the strip-like material, a cutting nozzle for directing a fluid jet under high pressure against the strip-like material, means for displacing said nozzle in a direction Y perpendicular to the strip length, means for displacing the strip-like material in both directions X parallel to the length of the strip, in such a way that the combined displacements of the strip-like material and said nozzle make it possible to make cuts of a random shape over a random length of the said strip-like material, said means for displacing the strip-like material according to the X-directions including a drive roller driven by motor means, and an opposing roller, said drive roller and said opposing roller having parallel spindles located in a common vertical plane so as to press the strip-like material between them, the bearing surface of the machine upstream of the cutting nozzle and on either side of said vertical plane being a fixed table on which is disposed a guidance tunnel for said strip-like material, said tunnel having a slot in which is located said drive roller, and means for producing a fluid cushion between the top of said table and the strip-like material.

4,620,467

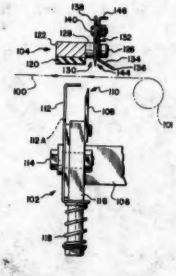
FILM CUTTER

Dallas A. Margraf, Spring Valley, and Fritz F. Treiber, Centerville, both of Ohio, assignors to Hobart Corporation, Troy, Ohio

Filed Oct. 1, 1984, Ser. No. 656,381
Int. Cl.[4] B26D *1/06*
U.S. Cl. 83—389 10 Claims

1. In a package wrapping machine wherein soft stretch film for wrapping packages is drawn in a plane into said machine from a continuous source of said film, an improved film cutter for severing film sheets from said continuous source comprising:
a first knife blade extending laterally across the plane defined by said film on one side thereof and having a serrated cutting edge facing the film;
a bracket extending laterally across the plane defined by said film on the side of said film opposite to said first knife blade, said first knife blade and said bracket being relatively movable and said bracket comprising an elongated first member and a mounting bar secured thereto and

spaced therefrom to define a channel such that said first knife blade may be moved into said channel to sever said film, said mounting bar having a flange oriented at an acute angle relative thereto to form a thin film contacting edge adjacent the plane defined by said film and extending away from said channel and toward said continuous source of film whereby film is not retained against said bracket by the static electrical forces generated when handling said film; and



film engaging means mounted within and extending along said channel for engaging said film between said first knife blade and said continuous source of film to facilitate the severance of said film, said film engaging means comprising a second knife blade secured parallel to said mounting bar and spaced therefrom, said second knife blade having a serrated cutting edge facing the film and extending in said channel to a point short of said film contacting edge.

4,620,468

PUNCHING MACHINE

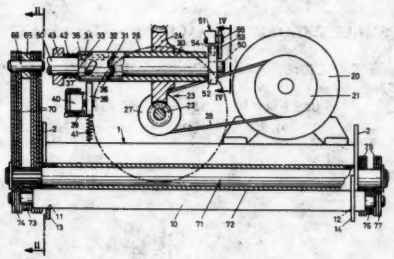
Benny Baumann, Baar, Switzerland, assignor to Ibico AG, Zurich, Switzerland

Filed Feb. 20, 1985, Ser. No. 703,367

Claims priority, application Switzerland, Feb. 21, 1984, 834/84

Int. Cl.[4] B26D *5/08*

U.S. Cl. 83—524 **6 Claims**



1. A punching machine for rectilinear hole punching, in particular for mechanical binding systems with a number of punches arranged in one row, a compression beam (10) acting on these punches and moving vertically in two lateral guides (13, 14), and with a rotating main shaft (71) for the simultaneous drive of both ends of the compression beam (10), characterized by the fact that the main shaft (71) is equipped, on the one hand, with a double-armed rocker (70) for transferring a motion from the driving part (15) to the main shaft (71) and the compression beam (10) and, on the other hand, with a one-arm rocker (75) for transferring the motion from the main shaft (71) to the compression beam (10), that for the transfer of the motion from the free ends of the rockers (70, 75) on the side of the compression beam to the compression beam (10), chain links (73, 76) are attached so they rotate to each of the rockers (70, 75) as well as to the compression beam (10), and that in the driving part (15) means are available (31–42, 51) in order to halt the motion of the rockers (70, 75) after each operating cycle.

4,620,469

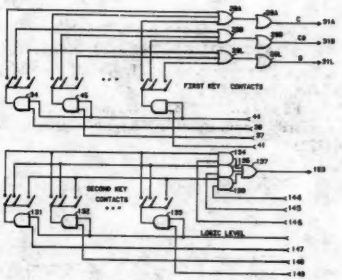
KEY ASSIGNOR FOR A TOUCH RESPONSIVE ELECTRONIC MUSICAL INSTRUMENT

Ralph Deutsch, Sherman Oaks, and Leslie J. Deutsch, Sepulveda, both of Calif., assignors to Kawai Musical Instrument Mfg. Co., Ltd, Hamamatsu, Japan

Filed Dec. 3, 1984, Ser. No. 677,637

Int. Cl.[4] G01H *1/02, 1/46*

U.S. Cl. 84—1.24 **11 Claims**



1. In combination with a keyboard operated musical instrument, apparatus for controlling a musical effect of a generated musical tone in response to the speed of actuating the keyboard switch by depressing said said keyboard switch comprising;

a plurality of keyboard switches arranged in a plurality of groups wherein each said group comprises a specified number of keyboard switches and wherein each one of said plurality of keyboard switches comprises a first switch contact and a second switch contact arranged such that in response to the depressing of a keyboard switch the first switch contact is actuated before said second switch contact is actuated,

a first means for detecting a switch contact status change for the first switch contacts in said plurality of groups during a search mode whereby a first detect signal is generated in response to a detected first switch contact status change from an unactuated to an actuated state,

a switch contact identifying means responsive to said first detect signal whereby an assignment data word is generated and encoded to identify one of said plurality of keyboard switches having a first switch contact which had a status change from an unactuated to an actuated state,

a logic clock for providing timing signals,

an interval counter for counting said timing signals, wherein the count state of said interval counter denotes the number of said timing signals that have been counted,

a first memory means,

a second memory means,

a time encoding means whereby said count state of said interval counter is encoded into said assignment data word and whereby said assignment data word is stored in said first memory means,

a first memory addressing means for reading out assignment data words from said first memory means,

a second means for detecting a switch status change for the second switch contact corresponding to the keyswitch identified by said identification encoded into said assignment data word read out from said first memory means whereby a second detect signal is generated in response to

a second switch contact change from an unactuated to an actuated state,

a time difference means whereby in response to said second detect signal the computed difference between said count state of said interval counter and said count state encoded in said assignment data word read out from said first memory means is calculated and whereby said computed difference is encoded in said assignment data word,

a second memory addressing means whereby in response to said second detect signal the assignment data word encoded by said time difference means is stored in said second memory means, and

a utilization means responsive to assignment data words stored in said second memory means whereby musical tones are generated having a musical effect corresponding to said computed difference encoded in each one of said assignment data words.

4,620,470

FINGERBOARD FOR STRINGED INSTRUMENTS

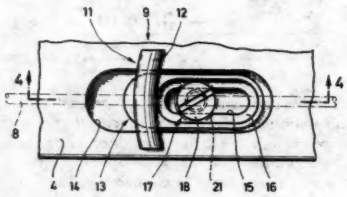
Walter J. Vogt, Pfarrer-Egen-Weg 11, 7240 Horb-Mühlen, Fed. Rep. of Germany

Filed Apr. 24, 1985, Ser. No. 726,510

Claims priority, application Fed. Rep. of Germany, May 12, 1984, 3417721

Int. Cl.⁴ G10D *3/06*

U.S. Cl. 84—314 R **6 Claims**



1. A fingerboard for stringed instruments, especially guitars, comprising transversely extending fret elements for varying the pitch of taut strings extending lengthwise over a fingerboard, whereby each fret element is arranged on a slider and is individually displaceable in the longitudinal direction of the strings in grooves of the fingerboard, characterized in that, each slider has an elongated hole extending parallel to the strings, and that the shaft of a locking screw with a head is fixed rotatably in the fingerboard, whereby the screw shaft penetrates the elongated hole and the screw head extends laterally above the elongated hole, so that the slider with its fret element is fixed onto the fingerboard when the locking screw is screwed in and that it is displaceable on the fingerboard when the locking screw is unscrewed in order to thus be able to precisely adjust the desired pitch of a string extension over the fret element.

4,620,471

CHORD SELECTOR FOR KEYBOARD MUSICAL INSTRUMENTS

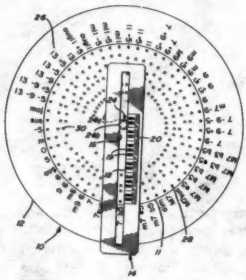
Roger Dunn, 1003 Galinée Street, Saint-Bruno, Canada J3V 3W5

Filed Jun. 8, 1984, Ser. No. 618,474

Int. Cl.⁴ G09B *15/08*

U.S. Cl. 84—480 **1 Claim**

1. An identification chart for chords and their constituent notes, comprising: a flat base sheet having a pivot in its center portion and an elongated first slide plate overlying one face of said base sheet and having a longitudinally-extending window, through which said pivot extends, means carried by said pivot slidably overlying said slide plate and retaining the latter, whereby it can be rotated and radially shifted relative to said base sheet about said pivot, said slide plate bearing along one longitudinal edge of said window, a graphic representation of a piano keyboard including at least two octaves with the key representations of the keyboard in ascending tone order from left to right along said window, the left-handmost key representing a C note, said window extending beyond both ends of said piano keyboard representation, said base sheet carrying on said one face the names of different chords, each arranged along a radius of said pivot, each radius substantially equally angularly spaced from two adjacent radii, said names contained in an annular area radially spaced from and concentric with said pivot, said base sheet further carrying, radially inwardly of said annular area and on said one face, a plurality of sets of markers, with the markers of each set radially aligned



with one of said chord names, the radially outermost markers of said set being disposed along a circle concentric with said pivot and having a colour contrasting with the colour of the remaining markers, any selected one of said chord names, together with the associated set of markers on the same radius, appearing through said window for any selected rotated position and any radially-shifted position of said slide plate, the markers of any set being spaced from one another, so as to register with the keys of the piano keyboard representation corresponding to the notes of the chord, the name of which appears through the window, for any selected root note of the same chord placed in register with the radially innermost marker of the set.

4,620,472

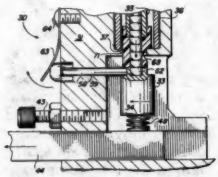
SHELL RELOADING MACHINE WITH SAFETY FEATURES

Stephen M. Dillon, 7442 E. Butherus Dr., Scottsdale, Ariz. 85260

Filed May 10, 1985, Ser. No. 732,682

Int. Cl.⁴ F42B *33/02, 33/10*

U.S. Cl. 86—27 **9 Claims**



1. A shell reloading machine comprisingiin combination:

a first frame,

a revolubly mounted shell registering plate adapted to carry a plurality of shells,

a support mounted on and arranged to extend above said first frame and said plate,

a plurality of tools mounted on said support, one at each of a plurality of work stations for preparing and reloading shells depending from said plate and arranged in a circle so as to register with a plurality of shells held by said plate,

said tools sequentially comprising one at each of said work stations a sizing die for reshaping the shells' outer wall and dislodging the spent primer from a primer cavity in the shell, primer cap insertion tool for inserting a new primer cap in the primer cavity of the shell, a powder dispenser and a bullet positioner and securing element,

a first means for sequentially supplying primer caps to said primer cap insertion tool,

said first means comprising a second frame mounted on said first frame,

a magazine for containing a plurality of stacked primer caps mounted on said second frame and having an orifice means defining a discharge opening for sequentially dispensing said caps one at a time,

said orifice means being formed of a flexible material with the discharge opening for caps being slotted for flexing purposes if required to avoid blockage,

a cup for sequentially receiving said caps from said magazine one at a time,

a second means comprising a spring biased bar having said cup mounted on one end thereof mounted on said second frame for repetitively moving said cup from said primer cap insertion tool to said orifice and back to said primer insertion tool, and

a third means comprising a rod mounted on said second frame and biased for normally blocking said orifice means to prevent said caps from moving therethrough,

said one end of said rod being engaged and movable to an orifice non-blocking position when said cup is moved by said second means to said orifice means for receiving a cap,

said third means being operable upon operation of said first means to cause one of said caps to move through said orifice and into said cup upon each operation of said first means,

a drive cylinder comprising piston means mounted below said plate,

said piston means being connected to said plate for moving shells mounted thereon into engagement with said tools,

said plate being revolubly mounted on said piston means, and

a lever arm pivotally mounted on said frame and connected at one end to said piston means for moving said plate toward and away from said tools to simultaneously execute various operations on the shells,

said lever arm comprising an operating arm and a linkage,

said linkage being pivotally connected at one end to said frame and at the other end to said operating arm,

whereby pivotal movement of said operating arm causes relative movement of said piston means.

4,620,473

MECHANISM FOR TIMING STRAND MOVEMENT RELATIVE TO ROTATION OF SPOOL HOLDERS OR CARRIERS FOR STRAND SUPPLY SPOOLS OR BOBBINS

Jeffrey F. Bull, 1270 Hazelwood Ave., Akron, Ohio 44305

Filed Aug. 19, 1985, Ser. No. 766,493

Int. Cl.[4] D04C *3/06, 3/24, 3/38, 3/42*

U.S. Cl. 87—48 **4 Claims**

1. A mechanism for timing strand movement relative to rotation of outer and inner spool holders for outer and inner sets of strand supply spools being rotated in opposite directions by the drive mechanism of a braiding machine, said drive mechanism being mounted around a central axis stationary shaft extending laterally from a base supported frame member, said strand movement timing mechanism comprising:

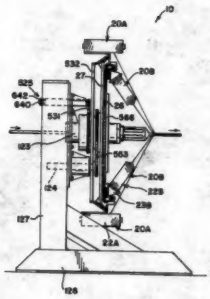
an adjustable control actuator means carried by said frame member and positioned radially of said central axis stationary shaft and housing a rotatable control shaft;

a first sprocket carried on said actuator means control shaft;

a journal sleeve positioned around said central axis stationary shaft;

a second sprocket aligned with said first sprocket and positioned coaxially around said journal sleeve and connected thereto;

a first chain means connecting said first sprocket with said second sprocket whereby rotation of said actuator control shaft will rotate said second sprocket and said journal sleeve relative to said central axis stationary shaft;



a circular control element positioned coaxially around said journal sleeve and connected thereto and projecting radially of said central axis stationary shaft and terminating in an edge positioned adjacent said outer set of spool holders; and,

a set of strand deflector cam plates positioned symmetrically around said control element edge and connected thereto and having contoured edge surfaces to guide the movement of strands from said set of outer spools relative to, over and under, moving strands from said set of inner spools.

4,620,474

DRIVE MECHANISM FOR TRANSMITTING FORCE AND MOTION ALONG A PATH

Jürg Eberle, Hinwil, Switzerland, assignor to Feramatic AG, Duernten, Switzerland

Filed May 8, 1984, Ser. No. 608,246

Claims priority, application Switzerland, May 17, 1983, 2685/83

Int. Cl.[4] F01B *29/00*

U.S. Cl. 91—418 **17 Claims**

1. A drive mechanism comprising

a first tubular member following a predetermined path;

a second tubular member substantially concentrically surrounding and spaced from said first member and following the same path;

means for closing the space between said first and second members at longitudinally spaced locations and restraining said members against relative longitudinal movement, thereby defining an elongated annular chamber;

a piston slidably surrounding said first member in said chamber;

means for selectively introducing fluid under pressure into

said chamber to cause longitudinal movement of said piston;

a flexible transmission member extending through said first tubular member; and

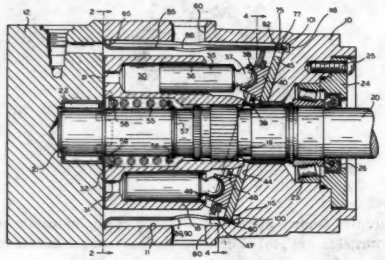
means for coupling the movement of said piston through the wall of said first tubular member to exert force on said transmission member.

4,620,475

HYDRAULIC DISPLACEMENT UNIT AND METHOD OF ASSEMBLY THEREOF

Thomas A. Watts, Ames, Iowa, assignor to Sundstrand Corporation, Rockford, Ill.

Filed Sep. 23, 1985, Ser. No. 779,389
Int. Cl.[4] F01B *13/04*
U.S. Cl. 91—499 **35 Claims**



1. A hydraulic displacement unit of the fixed displacement type having a housing with a cavity, a rotatable cylinder block in said housing cavity and carrying a plurality of pistons axially reciprocable in chambers in said cylinder block as the cylinder block rotates, an inclined swash surface at one end of said cavity, an end cap for closing said cavity, means for securing said end cap to said housing, a slipper associated with each of said pistons and each having a slipper foot engageable with said inclined swash surface for controlling the axial stroke of said pistons, an annular slipper retainer bearing, an annular slipper retainer associated with said slippers and captured between said annular slipper retainer bearing and the slipper feet, a tubular member compressively captured between said swash surface and said end cap, with an end of the tubular member engaging said swash surface, and interengaging means on said tubular member at a distance from said end thereof and on said retainer bearing to provide a fixed maximum clearance between the slippers and the swash surface.

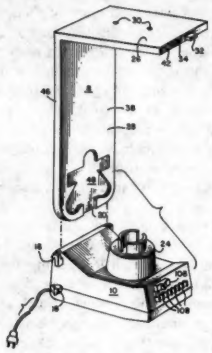
4,620,476

MULTI-PURPOSE KITCHEN APPLIANCE

Stanley J. Brym, Torrington, Conn., assignor to Dynamics Corporation of America, Greenwich, Conn.

Filed Jul. 29, 1985, Ser. No. 760,092
Int. Cl.[4] B01F *7/00, 15/00*; A47J *43/00, 44/00*
U.S. Cl. 99—484 **23 Claims**

1. A combined multi-purpose kitchen appliance, comprising bracket means for attachment beneath a cabinet; an appliance unit having first and second kitchen appliances thereon, said first and second kitchen appliances being situtated on said appliance unit in a manner causing the first kitchen appliance to be in an operative use position in a first orientation of the appliance unit and the second kitchen appliance to be in an operative use position in a second orientation of the appliance unit; and connection means for interconnecting said bracket means with said appliance unit in manner enabling stable retention of said appliance unit in each of said first and second



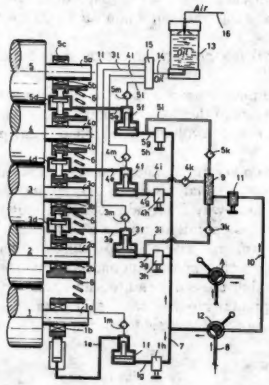
orientations as well as pivoting of said appliance unit, relative to said bracket means, therebetween.

4,620,477

CONTROL SYSTEM FOR CONTROLLING THE PRESSURE ON CHOCOLATE REFINING MACHINE ROLL BEARINGS

Sergio Ripani, and Giulio Serafini, both of Milan, Italy, assignors to Carle & Montanari S.p.A., Milan, Italy

Filed Apr. 22, 1985, Ser. No. 726,199
Claims priority, application Italy, May 10, 1984, 20863 A/84
Int. Cl.[4] B02C *25/00*
U.S. Cl. 99—486 **5 Claims**



1. In a chocolate refining machine having a feeding roll pair and more than one refining roll located downstream of said feeding roll pair, each of said refining rolls being supported by bearings, a dual-function control system for controlling the pressure on the refining roll bearings for accomodating chocolate pastes of varying plasticity and fat content comprising a linked multi-pressure control circuit for said refining rolls comprising a hydraulic control unit for acting upon the bearing of each refining roll, a double-acting hydraulic pneumatic pressure step-up device having a hydraulic chamber and a pneumatic chamber, a first pressurized air conduit means connecting the hydraulic chamber of the related step-up device and hydraulic unit, a pneumatic regulator pressure regulator associated with each step-up device, second pressurized air

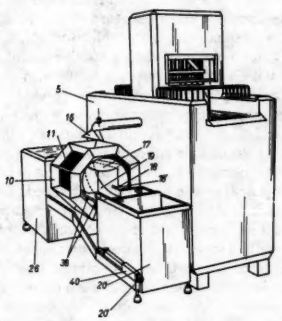
conduit means connecting the hydraulic chamber of the related step-up device and pneumatic pressure regulator, there being a source of pressurized air, third pressurized air conduit means common to each of said pneumatic pressure regulators connecting each of them with said pressurized air source, there being a complementary linked single pressure control circuit for said refining rolls comprising a first hydraulic liquid conduit connected at one end with said second pressurized air conduit means between each pair of related step-up devices and pressure regulators, a hydraulic liquid manifold, each of said first hydraulic liquid conduits being connected at the other ends thereof with said manifold, a liquid pressure regulator, means connecting said hydraulic liquid manifold and said pressure regulator, a second hydraulic liquid conduit connecting said hydraulic liquid pressure regulator with said source of hydraulic liquid, there being a multi-positional selector valve interposed between said source of pressurized air, on the one hand, and the linked multi-pressure control circuit and said linked single pressure control circuit, on the other hand, whereby with said selector valve in one operating mode, said linked multi-pressure control circuit is energized, and with said selector valve disposed in another operating mode, said linked single-pressure control circuit is energized.

4,620,478

FILTRATION APPARATUS FOR USE WITH A MEAT-PIECE FLUID INJECTOR

Narciso L. Corominas, Gerona, Spain, assignor to Metalquimia S.A., Gerona, Spain

Filed Jan. 11, 1985, Ser. No. 690,592
Claims priority, application Spain, Oct. 24, 1984, 537043
Int. Cl.[4] A23B *4/02*; A23L *3/34*
U.S. Cl. 99—533 **6 Claims**



1. Fluid filtration apparatus, for use in conjunction with the reservoir of a fluid-injecting machine for meat pieces, comprising:

a pressurized water source;

a plurality of mesh-bottomed filter receptacles assembled in a vertical circular ensemble having an innermost direction, an outermost direction, and uppermost direction, and a lowermost direction; whereby the mesh bottoms are disposed in said innermost direction; an outflow port in communication with the fluid-injecting machine;

an upper exhaust-fluid nozzle fixedly mounted above an uppermost one of said plurality of filter receptacles and connected to said outflow port of the fluid-injecting machine so that unfiltered fluid may be dumped into said uppermost one of said plurality of receptacles,

a set of trays disposed in a direction below said uppermost one of said plurality of filter receptacles and within said circular ensemble so as to capture filtered fluid emanating from said uppermost one of said plurality of receptacles; a rotatably mounted pipe disposed within said circular ensemble;

a fluid delivery means communicating between said set of trays and the reservoir of the fluid-injecting machine,

a lowermost one of said plurality of filter trays being in an inverted position;

a plurality of lower nozzles mounted on said rotatably mounted pipe within said circular ensemble, and in a direction below said set of trays, and in a direction above said lowermost one of said plurality of filter receptacles, and connected to said pressurized water source, and

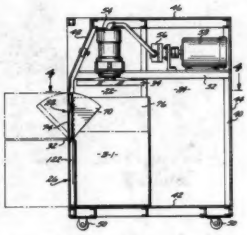
a drive means including a linear hydraulic motor, arranged to rotate said circular ensemble at one speed while simultaneously rotating said rotatably mounted pipe and said plurality of lower nozzles at a different speed and on a regularized intermittent basis so as to cause effluent from said upper exhaust-fluid nozzle to run substantially completely over the mesh bottom of said uppermost one of said plurality of filter receptacles while pressurized water from said plurality of lower nozzles sweeps over the mesh bottom of said lowermost one of said plurality of filter receptacles.

4,620,479

AIRCRAFT TRASH COMPACTOR AND BOX THEREFOR

Fredric L. Diamond, Big Bear City, and Kenneth E. Andrews, Irvine, both of Calif., assignors to A.K.G.S. Partnership, Las Vegas, Nev.

Filed Jul. 27, 1984, Ser. No. 635,141
Int. Cl.[4] B30B *15/30*
U.S. Cl. 100—215 **5 Claims**



1. A trash compactor for use with a trash-receiving box including a body having side and back walls of predetermined height, a front wall of a selected height less than said predetermined height, said box further having a predetermined exterior horizontal cross section, a selected interior cross section and having closure flaps of a predetermined thickness, said back and side flaps being arranged to originally extend upwardly from the top of the rear and side box walls to terminate in top edges spaced a selected distance from the bottom of said box, said trash compactor comprising:

a housing having a box chamber that receives such box with the front closure flap of the box bent downwardly and the rear and side closure flaps of the box extending upwardly;

a power-operated compacting head including a vertically reciprocable platen movable downwardly into said box when the latter is disposed in the box chamber and configured to space the opposite sides thereof away from said side walls of said housing a distance greater than said predetermined thickness to thereby form respective side clearance spaces;

a normally closed front door extending upwardly from said housing bottom wall a distance greater than said selected distance;

a normally closed trash-receiving chute formed in the upper portion of said front door and extending upwardly from said predetermined height, said chute being movable from

a closed to an open position for dumping trash into said box disposed in said box chamber; and

with said trash-receiving chute being formed with a front wall and side retainers that extend inwardly from said front wall, said chute being movable between its open position, wherein said retainers and front wall guide trash into the front box chamber, and its closed position wherein said retainers project rearwardly into said respective clearance spaces and along the inner surfaces of said side closure flaps to maintain said flaps out of the path of said compacting platen when the latter is disposed within said box.

4,620,480

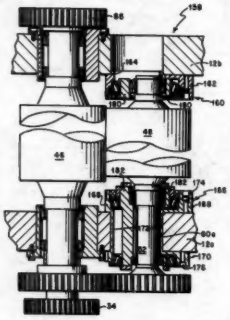
CONVERSION OF LETTERPRESS TO OFFSET PRINTING

Carl J. Hermach, Gulfport, Fla., assignor to Publishers Equipment Corporation, Carrollton, Tex.

Continuation-in-part of Ser. No. 175,126, Aug. 4, 1980, abandoned, which is a continuation-in-part of Ser. No. 122,908, Feb. 20, 1980, abandoned. This application Nov. 24, 1980, Ser. No. 209,222

Int. Cl.[4] B41F *5/22, 13/08*

U.S. Cl. 101—179 **7 Claims**



1. In an offset press unit having a main frame defining a pair of spaced apart walls having bores therein, a pair of plate cylinders rotatably supported within said frame and disposed in spaced apart relation, and a pair of blanket cylinders rotatably supported within said frame disposed for rolling contact with each other and with one of said plate cylinders, internal support means secured to at least one of said walls including at least one bearing entirely inside the main frame rotatably supporting at least one of said cylinders and external support means secured to the other of said walls including at least one bearing entirely outside the main frame, said at least one cylinder supported by said internal support means including a shaft extending through one of said bores in said main frame supported by said at least one bearing of said external support means wherein said internal support means includes separate portions each secured to one of said walls of said main frame, each said portion having at least one bearing entirely inside said main frame rotatably supporting said at least one of said cylinders, wherein one portion of said internal support means includes at least one bracket secured to said one of said walls of said main frame housing said at least one bearing thereof, and said other portion thereof and said external support means includes at least one assembly including an internal support ring housing said at least one bearing of the other portion of said internal support means, an external support ring housing said at least one bearing of said external support means and a pilot interconnecting said internal and external support rings.

4,620,481

INKING UNIT FOR A PRINTING MACHINE

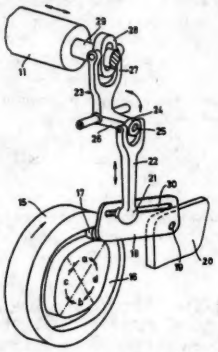
Gerd Steiner, Heusenstamm, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 3, 1985, Ser. No. 752,248

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1984, 3424721

Int. Cl.[4] B41F *31/14, 31/34;* **B41L** *27/16*

U.S. Cl. 101—350 **8 Claims**



1. An inking unit for a rotary offset printing machine having a frame, in which the ink is taken from an ink reservoir in metered quantities and distributed by inking rollers to form an ink film which is adapted to be applied to a printing plate covering a portion of the surface of a plate cylinder by means of an axially displaceable ink applicator roller, characterized in that the axially displaceable ink applicator roller performs essentially no axial movement during application of ink to the printing plate which covers the portion of the plate cylinder surface and axial displacement of the ink applicator roller is effected in the phase of a machine cycle in which another portion of the plate cylinder is not covered by the printing plate and the ink applicator roller is not in engagement with the printing plate, comprising, in combination, a cam driven at an integral reciprocal of the plate cylinder speed, a lever pivoted on the machine frame and having a roller engaging the cam, a push rod secured to the lever for movement substantially radially with respect to the applicator roller and means including a bell crank having one arm pinned to the push rod and another arm extending at a right angle thereto for converting radial movement of the push rod to axial movement of the applicator roller, said cam having respective pairs of transition and dwell zones equal in number to the integral of plate cylinder speed and said dwell zones each providing a timing interval substantially equal to the rotational speed interval of a plate covered portion of the plate cylinder surface.

4,620,482

ROTARY PRINTING MACHINE CYLINDER BLANKET CONSTRUCTION AND INSERTION TOOL

Hermann Fischer, Augsburg, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Oct. 3, 1984, Ser. No. 657,193

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1983, 3338450

Int. Cl.[4] B41F *27/06*

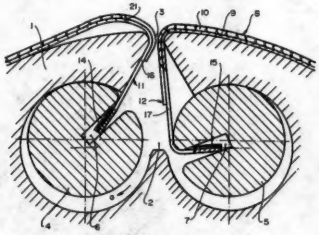
U.S. Cl. 101—415.1 **12 Claims**

1. In a rotary printing machine blanket **(8, 9)** which, in plan view, is substantially rectangular, defining terminal edges, adapted for insertion into an axial slot or groove **(2)** through a peripheral opening **(3)** of a printing machine cylinder,

said blanket having a reinforcement zone (14, 15, 20) extending transversely of an end portion (11, 12) of the blanket inwardly from said terminal edges, and located close to the terminal edges,

wherein the cylinder is formed with blanket engagement means (4, 5; 6, 7) located within the slot or groove (2) for engaging the reinforcement zone of the blanket and for stretching the blanket about the circumference of the cylinder after insertion of the end portions (11, 12) of the blanket into the slot or groove,

the improvement comprising



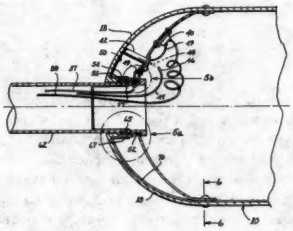
the width of said peripheral opening being only slightly greater than twice the thickness of said blanket, and means to enable engagement of a tool with said reinforcement zone when said reinforcement zone is located within the slot or groove of the cylinder and the blanket is stretched about the circumference of the cylinder to positively insert said reinforcement zone within said blanket engagement means, said means to enable including a plurality of zones of reduced thickness of material of said blanket beginning at said reinforcement zone and extending longitudinally with respect to said blanket.

4,620,483

MISSILE SAFE AND ARM SYSTEM

Clarence E. Simpson, Phoenix, Ariz., assignor to Unidynamics Phoenix, Inc., Phoenix, Ariz.

Filed Jul. 17, 1984, Ser. No. 631,807
Int. Cl.[4] F42C *1/00*
U.S. Cl. 102—222 **7 Claims**



1. In an explosive missile having a missile body and having an extendable probe, an arm and safe system comprising:

a. impact responsive means mounted in said probe for generating a detonation signal;

b. initiator means mounted in said body responsive to said signal for initiating an explosive train;

c. an explosive charge mounted in said missile body;

d. a first explosive train, positioned in said missile body, extending from said initiator and terminating at a first termination point positioned in said missile adjacent said probe;

e. a second explosive train, positioned in said probe, extending from adjacent said first terminal point of said first explosive train, when said probe is extended, to a second termination point; said second explosive train being misaligned with said first termination point when said probe is not extended.

f. a third explosive train, positioned in said missile body, extending from adjacent said second termination point, when said probe is extended, to said explosive charge.

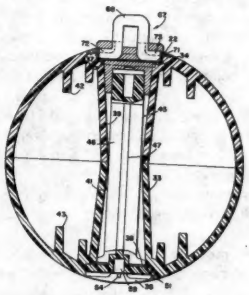
whereby said explosive charge may be detonated only when said probe is extended.

4,620,484

PRACTICE BOMB

Zvi Livne, Shavei Zion, Israel, assignor to Polyzive, Western Galilee, Israel

Continuation of Ser. No. 418,984, Sep. 16, 1982, abandoned. This application Mar. 11, 1985, Ser. No. 710,538
Claims priority, application Israel, Oct. 26, 1981, 64109
Int. Cl.[4] F42B *25/18*
U.S. Cl. 102—395 **9 Claims**



1. A practice bomb for use in training personnel to use actual bombs, said practice bomb comprising:

a substantially hollow watertight body of foamed glass reinforced plastic material shaped to approximate the entire outer shape of an actual bomb, said body including at least two hollow cylindrical seat sections which are spaced apart in each of top and bottom half sections of said body, from said seat sections, means defining bores extend inwardly and are joined therein so as to form at least two bores through said top and bottom half sections, while maintaining the body watertightness, said means defining bores providing said practice bomb with resistance to compression forces;

two separate lug suspension means each including an upper part and a lower part, said upper part including a loop portion adapted to accommodate a hook from a bomb suspension mechanism aboard an airplane, said loop portion molded into a base portion having an aperture defined by threaded internal cylindrical walls and by external walls insertable into said bores, said lower part including a main section, a threaded section on one end thereof, and an enlarged section on another end thereof, said threaded section and the main section extending through one of said bores for threadably engaging the threaded internal cylindrical walls of said upper part with said threaded section as said enlarged section is rotated whereby said lower part pulls said upper part toward said body and secures said lug suspension means to said body; and

impact means fixedly connected to said body for receiving the impact of a bomb launching mechanism on said airplane.

4,620,485

TRAINING CARTRIDGE

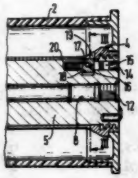
Roland Bertiller, Schramberg, Fed. Rep. of Germany, assignor to Mauser-Werke Oberndorf GmbH, Fed. Rep. of Germany

Filed Nov. 2, 1984, Ser. No. 667,546

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1983, 3339745

Int. Cl.[4] F42B 5/22

U.S. Cl. 102—444 15 Claims



1. An adaptation cartridge for firing subcaliber ammunition from a gun having a breech mechanism for receiving the adaptation cartridge and and adapted barrel for receiving a projectile of the subcaliber ammunition, comprising:

a cartridge chamber for receiving the subcaliber ammunition and for being centrally engaged against the breech mechanism;

a firing pin casing centrally engaged in said cartridge chamber from an end of said cartridge chamber adapted to face the breech mechanism, said firing pin casing having a firing pin bore;

a firing pin movable in said firing pin bore for firing the subcaliber ammunition received in said cartridge chamber;

first safety means connected between said firing pin casing and said cartridge chamber for preventing relative axial and relative radial movement therebetween; and

second safety means connected in said firing pin casing for blocking movement of said firing pin into a position to ignite subcaliber ammunition received in said cartridge chamber.

4,620,486

RAIL-GUARD TRANSPORTATION SYSTEM

Paul Gronau, Berlin, and Jürgen Gronau, Bergisch Gladbach, both of Fed. Rep. of Germany, assignors to Kottgen GmbH & Co. Kommanditgesellschaft, Bergisch Gladbach, Fed. Rep. of Germany

Filed Jan. 25, 1984, Ser. No. 573,511

Claims priority, application European Pat. Off., Mar. 30, 1983, 83103156.2

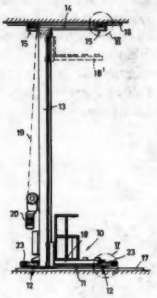
Int. Cl.[4] E01B 25/12; B61B 13/04

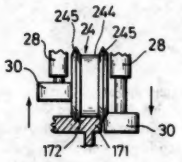
U.S. Cl. 104—121 11 Claims

1. In a rail-guided transportation system comprising a ground rail having diverging tracks including junctions and switch points, an upper rail and vehicles guided at the rails by bogies rotatable about vertical axles, each bogie being provided with a bogie wheel running on the associated rail with guide rollers arranged laterally in advance of the bogie wheel, the improvement wherein:

the bogie wheel running on said ground rail has lateral flanges and said ground rail contains a head profile engaged by said lateral flanges, and wherein;

at said junctions and switch points, in diverging tracks of the ground rail, the head profile is provided with slots whose width corresponds approximately to the width of the flanges, said bogie wheel remaining in entire continuous engagement with said head profile as said bogie wheel





follows said slots through said junctions and switch point without tilting.

4,620,487

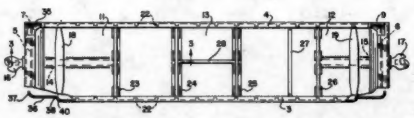
AERODYNAMICALLY STRUCTURED RAILWAY CAR

Robert L. Gielow, Farmington, and James C. Paul, Ypsilanti, both of Mich., assignors to Pullman Standard, Chicago, Ill.

Filed Feb. 27, 1984, Ser. No. 583,647

Int. Cl.[4] B61D 17/02

U.S. Cl. 105—2 R 6 Claims



1. In a railway car having a bottom closure structure and a pair of side walls and a pair of end walls engaged with and extending upward substantially vertically from said bottom closure structure for forming a space for containing cargo, each of said side walls having an exterior surface and an interior surface and each of said end walls having an exterior surface and an interior surface, the improvement comprising:

each of said side walls having a portion extending longitudinally beyond said exterior surface of each of said end walls;

each of said side wall portions extending beyond said exterior surface of said end wall having a laterally inward extending curve for forming a vertically extending convex curved surface along each of two vertically extending end portions of each of said end walls;

each of the side walls having a laterally inward offset side wall portion adjacent each end of each of said end walls, each of said offset side wall portions having a smooth exterior surface and each of said vertically extending curved surfaces being engaged with an end portion of one of said offset side wall portions for guiding air flow con-

formingly along said curved surfaces and said exterior surfaces of said offset side wall portions;

a vertically extending member having a second convex curved surface connecting an exterior surface of each of said offset side wall portions to an exterior surface of one of said side walls for causing air to conformingly flow along said offset side wall portions and along said second curved surface and said smooth side of said side wall for reducing aerodynamic drag on said car;

a laterally extending substantially horizontally disposed member having a convex curved surface extending downward and longitudinally toward said space and connecting a lower end portion of one of said end walls to said bottom closure for reducing aerodynamic drag on said car; and

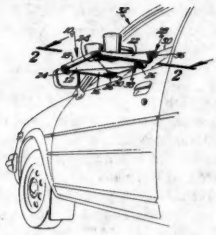
each of said side walls having a substantially smooth surface whereby upon movement of said car in operation air flows conformingly along said exterior surfaces of said side walls for reducing aerodynamic drag on said car.

4,620,488

SERVING TRAY

Jerome L. Formo, St. Paul, Minn., assignor to O Tray Corporation, Oklahoma City, Okla.

Filed Jul. 24, 1985, Ser. No. 758,364
Int. Cl.[4] B65D *1/34*
U.S. Cl. 108—46 **20 Claims**



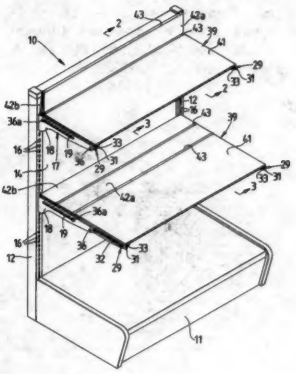
1. In a serving tray for an automobile having a window with an outside surface and an upper edge, with the serving tray including a serving platform having an upper surface and a bottom surface, a front wall, a rear wall having a top edge, and first and second side walls extending between the front wall and the rear wall to give suspension bridge strength to the serving platform, first and second front legs extending from the bottom surface of the serving platform adjacent to the intersection of the front wall and the side walls, first and second rear legs extending from the bottom surface adjacent to the intersection of the rear wall and the side walls; a strut extending generally downwardly from the top edge of the rear wall forming an inverted V-shaped window hook, with the strut abutting with and supported by the upper edge of the window and with the rear wall forming a window abutting portion for abutting with and fulcrumming on the outside surface of the window, with the improvement comprising, in combination: a window abutting element having a window abutting edge; means for laterally positioning the window abutting element with respect to the serving platform allowing the window abutting edge to abut with and fulcrum on the outside surface of the window to compensate for variations of the angle of the window to allow the serving platform of the serving tray to be horizontal; with the laterally positioning means comprising, in combination: means for slideably mounting the window abutting element to the bottom surface of the serving platform comprising arms extending from the bottom surface of the serving platform generally parallel to and spaced from the rear legs and connectors extending between the arms and the rear legs generally parallel to the bottom surface of the serving platform; means for holding the window abutting element in one of multiple positions comprising: teeth formed on the bottom surface of the serving platform, teeth formed on the window abutting element complementary to and for interacting with the teeth of the serving platform, and means for biasing the window abutting element towards the bottom surface of the serving platform and for allowing movement of the teeth of the window abutting element to be separated from the teeth of the serving platform, with the biasing and movement allowing means comprising a tongue formed integrally with the window abutting element and formed by a slot extending between the tongue and the window abutting element, with the tongue being slideable along the connector of the slideably mounting means.

4,620,489

EXTENDIBLE MERCHANDISE SHELVING DISPLAY

Vincent J. Albano, Birmingham, Ala., assignor to The Kent Corporation, Birmingham, Ala.

Filed Sep. 7, 1982, Ser. No. 415,172
Int. Cl.[4] A47B *96/02*
U.S. Cl. 108—105 **3 Claims**



1. An extendible merchandise shelving display comprising,

(a) at least one vertical support,

(b) at least one elongated, stationary shelf support having means for connecting said stationary support to said vertical support,

(c) an elongated, movable shelf support extending alongside and slidably connected to said stationary support for sliding movement relative to said stationary support selectively to an extended position with the rear end of said movable support being spaced from said vertical support and to a retracted position with said rear end being adjacent said vertical support wherein a longitudinally extending slot is provided through said movable support in position to receive a first guide member carried by the front end portion of said stationary support and a longitudinally extending slot is provided through said stationary support in position to receive a second guide member carried by the rear end portion of said movable support,

(d) means carried by said movable support and said stationary support and adapted to cooperate with each other to limit sliding movement of said movable support while in said extended position and while in said retracted position, there being a downwardly opening recess at the forwardmost end of said longitudinally extending slot in said movable support in position to engage said first guide member upon sliding movement of said movable support to said retracted position, and there being a downwardly opening recess at the rearmost end of said longitudinally extending slot in said movable support in position to engage said first guide member upon sliding movement of said movable support to said extended position,

(e) a shelf-like member carried by said movable support,

(f) at least two movable shelf-like elements carried by said stationary support and pivotally connected to each other along adjacent longitudinal edges with the other longitudinal edge of one shelf-like element being pivotally connected to the rear longitudinal edge of said shelf-like member and with the other longitudinal edge of the other shelf-like element being pivotally connected to said stationary support with said shelf-like element being adapted for pivotal movement selectively to a generally horizontal, article supporting position upon sliding movement of said movable support to said extended position and to generally upstanding positions adjacent said vertical support upon sliding movement of said movable support to said retracted position, and

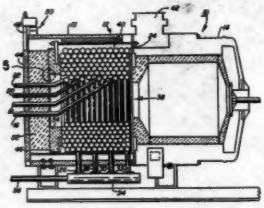
(g) stop means limiting downward pivotal movement of said shelf-like elements while in said generally horizontal position.

4,620,490

DOOR SEAL

Robert T. Brady, Elmhurst, and James G. Guyon, Chicago, both of Ill., assignors to Vapor Corporation, Chicago, Ill.

Division of Ser. No. 300,242, Sep. 8, 1981, Pat. No. 4,422,387.
This application Oct. 4, 1983, Ser. No. 539,042
Int. Cl.[4] F23M *7/00*
U.S. Cl. 110—173 R **11 Claims**



1. In a fluid heater of the type including a housing, a burner in said housing, a fluid containing heat exchanger in said housing in heat transfer relationship with said burner, and an access door in said housing opposite said burner, said door including a peripheral edge and an inner surface, the improvement comprising;

a seal for said access door, said seal including a compressible gasket covering the interior surface of said access door extending over said surface of said door and beyond said surface to cover at least a portion of said peripheral edge of said surface, and means for adhering said gasket to said interior surface, said adhering means including separate means securing said gasket and said peripheral edge of door to each other.

4,620,491

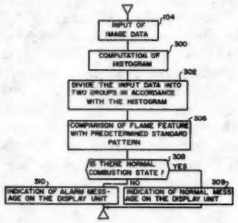
METHOD AND APPARATUS FOR SUPERVISING COMBUSTION STATE

Mitsuyo Nishikawa, Hitachi; Nobuo Kurihara, Hitachiohta; Yoshio Sato, Hitachi; Atsumi Watanabe, Hitachi; Toshihiko Higashi, Hitachi; Hisanori Miyagaki, Hitachiohta; Atsushi Yokogawa, Hitachi, and Yoshihiro Shimada, Izumi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 23, 1985, Ser. No. 726,392
Claims priority, application Japan, Apr. 27, 1984, 59-83782; May 11, 1984, 59-92872; May 21, 1984, 59-100538
Int. Cl.[4] F23M *5/00*
U.S. Cl. 110—185 **17 Claims**

1. In a method of supervising the combustion state of a combustion furnace using a burner consisting of fuel injection nozzles for jetting a mixture of a dust coal fuel and a gas or water and air nozzles for injecting the air for combustion, disposed around said fuel injection nozzles, the improvement comprising:

measuring a sectional image of a flame concentrically formed with the direction of the fuel injected from said burner being the center, and extracting two oxidizing flame zones as high luminance zones;



calculating the shape parameters of said two oxidizing flame zones thus extracted;

calculating and estimating the quantities of NOx formed or unburnt components in ash using said shape parameters thus calculated; and

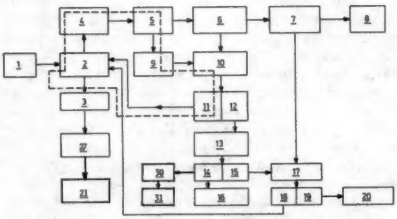
supervising the combustion state of said furnace in accordance with the calculated estimation values.

4,620,492

PROCESS FOR PURIFYING FLUE GAS

Hubert Vogg, Karlsruhe; Hartmut Braun, Bad Herrenalb, and Gabriele Jindra, Graben-Neudorf, all of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Jul. 23, 1985, Ser. No. 759,128
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1984, 3427941; Oct. 4, 1984, 3436339
Int. Cl.[4] F23J *11/00, 15/00*
U.S. Cl. 110—345 **13 Claims**



1. A process for purifying flue gas generated during the combustion of waste materials and containing water vapor and particulates, as well as gaseous, liquid, and particulate pollutants, said gaseous pollutants including hydrochloric acid vapor and heavy metal vapors, and said particulate pollutants including heavy metals, the process comprising:

a. separating the majority of particulates from the flue gas leaving a combustion system in a dry solids separation system and collecting the separated particulates as flue ash, said flue ash containing noxious organic substances;

b. condensing vapors, including water, hydrochloric acid and heavy metal vapors, from the flue gas after it leaves the separation system in a condensation/scrubbing system, whereby an acidic condensate solution containing dissolved heavy metals is formed and the remaining particulates are scrubbed from the flue gas;

c. extracting soluble heavy metals from the collected flue ash

with the acidic condensate solution, whereby an extraction slurry is obtained;

d. separating out the extraction slurry in a solid-liquid separation system, whereby a purified residue is recovered and a first acidic filtrate containing dissolved heavy metals is obtained; and

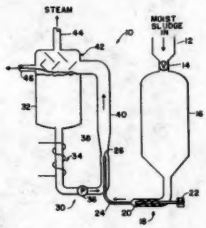
e. returning the purified residue to the combustion system to pyrolyze noxious organic substances contained therein, thereby thermally decomposing the noxious organic substances into harmless substances.

4,620,493

SEWAGE SLUDGE DEWATERING USING FLOWING LIQUID METALS

Larry W. Carlson, Oswego, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 30, 1985, Ser. No. 770,907
Int. Cl.[4] F23G *7/04*
U.S. Cl. 110—346 **16 Claims**



1. A method of reducing the moisture content of a moist sewage sludge having a moisture content of about 50–80% and formed of small cellular micro-organism bodies having internally confined water, the method comprising the steps of:

circulating a hot liquid metal in a loop;

forming a mixture of the moist sludge and the hot liquid metal in a portion of the loop under conditions of temperature and pressure such that the confined water vaporizes and ruptures the cellular bodies;

separating the liquid metal, dried sludge, and vaporized water in a separation zone of the loop; and

drawing off the dried sludge and vaporized water from the loop whereby the liquid metal is left to be recirculated in the loop.

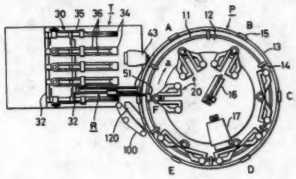
4,620,494

CONVEYOR FOR USE IN CARRYING LEG PARTS OF HALF MADE PANTYHOSE IN AN INTEGRATED PANTYHOSE SEWING MACHINE

Oushou Takatori, 1516-9, Sekiya, Kashiba-cho, Kitakatsuragi-gun, Nara; Osami Kanda, 148-5, Iwami, Miyake-cho, Shiki-gun, Nara, and Kunihiro Kitamura, 365, Imaki, Ohyodo-cho, Yoshino-gun, Nara, all of Japan

Filed Oct. 23, 1985, Ser. No. 791,996
Claims priority, application Japan, Oct. 24, 1984, 59-224638
Int. Cl.[4] D05B *21/00*
U.S. Cl. 112—121.15 **4 Claims**

1. In an integrated pantyhose sewing machine comprising a panty part sewing machine provided with a plurality of clipping members which seams a pair of hose together up to a pair of half made pantyhose before the clipping members, clipping the hose, finish a round-trip on a given closed path, a toe part sewing machine provided with a plurality of suction members which seams both the toe parts of said half made pantyhose up to a complete product before the suction members finish a round-trip on a given closed path, and a delivering member that delivers said half made pantyhose from said clipping member to said suction members, which is disposed on junction of said panty part sewing machine and said toe part sewing machine, a conveyor for use in carrying leg parts of said half made pantyhose, which is characterized in that a belt conveyor is disposed close to where the delivering is made in such a way that one end thereof is located close to where said clipping members bring said half made pantyhose with dangling leg



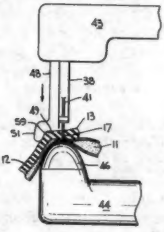
parts; the other is located close to where suction members stop and that a guide member is disposed so closely as to touch to the surface of said belt conveyor in order that said leg parts of said half made pantyhose may be held and carried by said belt conveyor to where said suction members stop so as to be delivered to said suction members.

4,620,495

MACHINE AND METHOD FOR STITCHING A SLIPPER UPPER TO AN OUTSOLE

Michael H. Ganon, Bexley, Ohio, assignor to R. G. Barry Corporation, Columbus, Ohio

Filed Feb. 6, 1986, Ser. No. 826,590
Int. Cl.[4] D05B *15/08, 27/04, 29/04*
U.S. Cl. 112—262.1 **4 Claims**

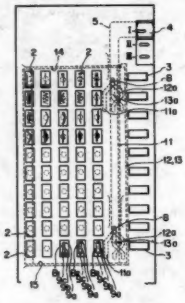


1. A machine for stitching a fabric slipper upper to an outsole, said outsole having a peripheral flange, the machine comprising upper and lower transversely extending support arms, a shuttle carrying a bobbin under thread mounted on said lower arm, a nosepiece mounted on said lower arm over said bobbin, an outer presser foot mounted on said upper arm for reciprocation in a vertical direction, an inner feeder foot mounted on said upper arm for reciprocation in a stitching direction perpendicular to said vertical direction, an eye-pointed needle carrying an upper thread mounted on said upper arm and extending through an opening in said feeder foot, said nosepiece having a blunted upper end containing an elongated slot through which said needle extends, there being no lower feed mechanism on said lower arm for cooperation with said feeder foot such that said feeder foot solely advances the slipper during stitching, said nosepiece having smooth and rounded end and side walls extending from said blunted upper end thereof, and said nosepiece extending upwardly of said lower arm and extendable into the slipper to facilitate stitching to the peripheral flange from the outer surface thereof.

4,620,496
PATTERN SELECTING DEVICE OF AN ELECTRONIC CONTROL SEWING MACHINE

Susumu Hanyu, Tokyo, Japan, assignor to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed Feb. 8, 1985, Ser. No. 699,864
Claims priority, application Japan, Feb. 17, 1984, 59-27337
Int. Cl.[4] D05B *3/02*
U.S. Cl. 112—445 **2 Claims**



1. A stitching pattern selecting device for use in an electrically controlled sewing machine, comprising a memory device for storing stitching pattern data, a front panel arranged at a front part of a sewing machine, said front panel being formed with a plurality of windows arranged in rows and columns, an attachment plate supporting an array of light emitting elements positioned behind the windows of the front panel, a plurality of transparent pattern indication boards superposed between the front panel and the attachment plate and being shiftable relative to each other, each pattern indication board having various stitching patterns imprinted thereon and being provided with at least one cam groove, switching means including a stitching mode changing key which is operable between a plurality of set positions, a slide key board connected to said stitching mode changing key and being movable between a plurality of set positions corresponding to the set positions of said stitching mode changing key, said slide key board having at least one projection formed thereon, said projection and said cam grooves of said pattern indicating boards cooperating with each other, as said stitching mode changing key is operated to one of said set positions thereof to thereby shift a selected pattern indication board in a display position in which the stitching patterns imprinted thereon are situated between the windows and the light emitting elements while only the transparent positions of the remaining pattern indication boards are situated in the windows, means for selecting a specific stitching pattern data stored in the memory device, said selecting means being coupled to said switching means so as to activate a light emitting element pertaining to an imprinted stitching pattern which corresponds to the selected stitching pattern data.

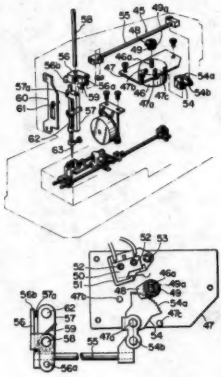
4,620,497
DEVICE FOR INITIALLY SETTING A COMPUTERIZED SEWING MACHINE

Yasuro Sano; Haruhiko Tanaka, both of Tokyo, and Eiji Murakami, Hachioji, all of Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed Oct. 25, 1984, Ser. No. 664,883
Claims priority, application Japan, Oct. 25, 1983, 58-198403; Oct. 25, 1983, 58-164044[U]
Int. Cl.[4] D05B *3/02, 69/28*
U.S. Cl. 112—453 **10 Claims**

1. An apparatus for initially setting a computerized sewing machine upon application of power thereto, the sewing machine having a needle that vertically and swingably reciprocates to variably position within a predetermined region having a plurality of needle positions therein, the apparatus comprising:

a pulse motor moving in steps and operatively connected to the needle and drivable in a control region having a reference point therein, said pulse motor drivable within said control region to variably position said needle within said predetermined region, said pulse motor drivable in an additional control region when the sewing machine is supplied with the power, said additional control region having a starting point therein from which said pulse motor is drivable to said reference point for initially setting the needle to one of said needle positions in said predetermined region;



a cam movable in association with said pulse motor;

detector means including a contact operative switch in said additional control region, said contact operative switch operated to produce a signal in contact with said cam when the latter moves in association with said pulse motor, said signal confirming that said pulse motor is positioned at said starting point in said additional control region from which said steps of said pulse motor are counted to said reference point in said control region; and

stopper means including a stopper and a spring, both of which cooperate to prevent said needle from moving beyond said predetermined region when said pulse motor is driven in said additional control region.

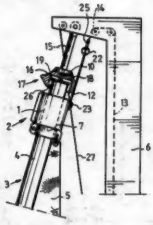
4,620,498
DEVICE FOR LIMITING THE ROTATIONAL MOVEMENT OF THE EXTERNAL PART OF THE SWIVEL OF A SAIL ROLLER FOR SAILING BOATS

Pierre Clausin, Ville d'Avray, France, assignor to Proengin, France

Filed Mar. 21, 1985, Ser. No. 714,414
Claims priority, application France, Oct. 31, 1984, 84 16783
Int. Cl.[4] B63H *9/10*
U.S. Cl. 114—106 **9 Claims**

1. A device for limiting the rotational movement of an outer part of a swivel of a sail roller equipping a sailing boat comprising at least a mast, a stay cable having an end portion adapted for connecting said stay to said mast and a halyard fixed to said swivel by fixing means and passing over guide means provided on the mast, said roller comprising at least one tube on which the sail may be rolled and which is mounted for rotation about said stay cable, said swivel comprising an inner part mounted for sliding on the tube and secured for rotation therewith, said inner part comprising means for fixing the sail, and said outer part mounted for rotation on said inner part and on which is mounted a connecting piece for fixing said halyard, said con-

necting piece extending from said outer part towards said end portion, said device further comprising at least one abutment piece fixed against axial and rotational movement on said stay cable and situated in a zone between the upper end of said tube



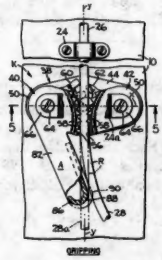
and said end portion, said abutment piece comprising at least two abutment surfaces which extend radially and said connecting piece passing between said abutment surfaces, when the swivel is at the level of said upper end of the tube.

4,620,499

CAM CLEAT

Arthur J. Slemmons, 19655 Redberry Dr., Los Gatos, Calif. 95030

Filed Apr. 1, 1982, Ser. No. 364,447
Int. Cl.[4] B63B *21/04*
U.S. Cl. 114—218 **7 Claims**



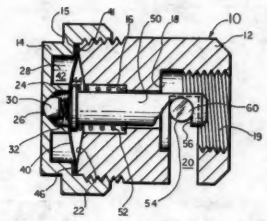
1. A cam cleat of the type having a base, laterally opposed rope gripping members mounted on said base, one of said members having a cam rope gripping surface, pivot means for mounting said one member on said base so that rotation of said one member moves said cam surface toward and away from a closed position relative to the opposing rope gripping member, a spring urging said cam surface toward said closed position, and an actuating arm projecting from said one member in a direction substantially parallel to the base and in an overcenter position when in said closed position, wherein a rope gripped by said cam rope gripping surface has a standing portion extending in a direction away from the direction of projection of said actuating arm and a fall portion extending in the direction of projection of said actuating arm, the improvement comprising an open rope-engaging face on said actuating arm, and a rope guiding lip on said actuating arm overlying said rope-engaging face, so that when the fall portion of the rope is brought to bear against said rope engaging face and said rope guiding lip said cam surface is moved away from said closed position and the rope is free to move clear of said opposed rope gripping members.

4,620,500

PRESSURE LOSS INDICATOR

James R. Condon, 45 Meadowbrook La., Hampden, Mass. 01051

Filed Aug. 12, 1985, Ser. No. 764,304
Int. Cl.[4] G01L *19/12*
U.S. Cl. 116—268 **19 Claims**



8. A pressure loss indicator for indicating a pressure decrease from a reference ambient pressure of the surroundings comprising:

a generally cylindrical body member interiorly forming an axial bore leading to a co-axial enlarged threaded bore and a release slot opening through a side of said member into said enlarged bore;

a cap member threaded to said body member and forming an inlet passage;

a bi-stable diaphragm captured between said cap member and body member and forming a first chamber and a second chamber, said first chamber opening via said inlet passage for selective pressure communication with the surroundings and said second chamber opening through said axial bore for continuous pressure communication with the surroundings;

a check valve disposed in said first chamber to selectively seal said chamber against pressure communication with the surroundings; and

a trigger assembly comprising a spring biased plunger engaging said diaphragm and selectively retaining an indicator pin, said plunger being axially displaceable in said axial bore in response to said diaphragm to release said indicator pin for movement through said release slot when the ambient pressure of the surroundings decreases to a level below that of the pressure in the first chamber.

4,620,501

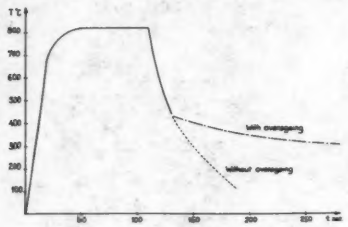
PROCESS AND INSTALLATION FOR CONTINUOUS MANUFACTURING OF AN OLD (OVER-AGED) STEEL BAND HAVING A COATING OF Zn, Al OR Zn-Al ALLOY

Charles Brun, Montataire, France, assignor to Union Siderurgique du Nord et de L'est de la France, Puteaux, France

Division of Ser. No. 612,958, May 23, 1984, Pat. No. 4,530,858.
This application Apr. 17, 1985, Ser. No. 724,318
Claims priority, application France, May 24, 1983, 83 08508
Int. Cl.[4] B05D *5/06*
U.S. Cl. 118—67 **6 Claims**

1. Continuous coating installation of a layer of Zn, Al or of a Zn-Al alloy for a cold laminated steel band (1) comprising feeding (supply) means for the band, a thermic treatment chamber (2) comprising heating means (3), followed by cooling means (4), a crucible (6) for maintaining in fusion the coating metal in which the return means (7) of the band (1) are disposed and extraction and guiding means of the band towards a post of stockage after cooling, the installation further comprising at the exit from the coating bath, after the extraction means, an over-ageing chamber (10) maintaining the coated band at a temperature comprised between 430° C. and 270° C. during (for) at least two minutes, this chamber (enclo-

sure) comprising an assembly of guiding rolls (12 to 19) wherein the guiding rolls 12 or 16 are arranged to provide a



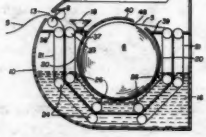
helic winding, during the first travel path of the band, so that only one face of the band is in contact with the guiding rolls.

4,620,502

HAND SANITIZER

Erma N. Kimble, 101 Intervale St., Apt. #2, Boston, Mass. 02121

Filed Jan. 31, 1986, Ser. No. 824,512
Int. Cl.[4] B05C *3/132*
U.S. Cl. 118—419 10 Claims



1. A device for wetting and dispensing towels, comprising:

a wall-mountable container having a front and back, top and bottom, and two sides, wherein the top is substantially a lid pivotally connected toward the back of the top and opening about said connection in an upward and backward direction, and wherein the front contains a horizontal slit across the front of the container below the front of the top lid;

a generally cylindrical canister for holding a roll of towels within, which canister is positioned along its longitudinal axis horizontally within the container, parallel to the container front, and having a longitudinal opening along its length, facing the rear of the top lid of the container;

a plurality of roller bars each of which having a length approximately equal to the length of the canister, horizontally positioned within the container about and parallel to the longitudinal axis of the canister;

a plurality of parallel belts, looped about the roller bars, having a width nearly equal to the length of the canister and forming a towel path about the radial circumference of the canister running substantially from the longitudinal opening in the canister downward along the inside back of the container, forward across the inside bottom of the container, and upward along the inside front of the container to a point just below the horizontal slit across the front of the container; and

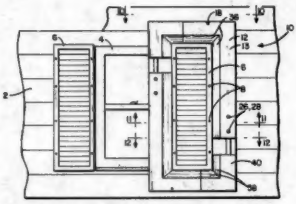
means for advancing a towel from the canister, along the towel path and out of the container through its horizontal slit.

4,620,503

SHUTTER MASKING MATS

Glenn B. Pullens, 10100 Harrison Rd., Bloomington, Minn. 55437

Filed Nov. 27, 1985, Ser. No. 802,301
Int. Cl.[4] B05C *21/00*
U.S. Cl. 118—505 8 Claims



1. A longitudinally adjustable masking mat for protecting and preventing the soiling or marking of an exterior wall or window when cleaning, finishing, refinishing or painting variously sized rectangular storm shutters without detachment of the masked shutter from the wall, comprising:

(a) a top L-shaped panel with a front side, a back side, a short leg, a long leg and an inclined engaging face on the back side of the short leg;

(b) a bottom L-shaped panel with a front side, a back side, a short leg, a long leg and an opposing inclined engaging face on the front side of the short leg of the bottom panel;

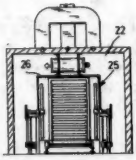
(c) an adjustable interlocking means longitudinally disposed on the back side of the long leg of the top panel and on the front side of the long leg of the bottom panel for slidably interlocking the top and bottom panels together in a longitudinally expandable and contractable U-shape arrangement to thereby adjustably mask variously sized shutters.

4,620,504

SLIP INCUBATOR FOR A CHICKEN BROODER PLANT

Arend J. Wormgoor, Diepenheim, Netherlands, assignor to A. J. Wormgoor B.V., Diepenheim, Netherlands

Continuation of Ser. No. 616,306, Jun. 1, 1984, Pat. No. 4,546,729. This application Jul. 16, 1985, Ser. No. 755,940
Claims priority, application Fed. Rep. of Germany, Jun. 9, 1983, 3320815
Int. Cl.[4] A01K *41/00*
U.S. Cl. 119—35 3 Claims



1. A slip incubator (20) for a chicken brooder plant, said slip incubator (20) adjoining a brooder oven (17) and comprising:

a heat insulated oven chamber (22) inside of which an actual slip incubator oven (25) is arranged, said actual slip incubator oven (25) being separated from the inner space of said insulated oven chamber (22) by a tunnel-form jacket (26) made of good heat conducting sheetmetal or the like;

a slip incubator cart (21) capable of traveling to and fro inside said oven chamber (22), said slip incubator cart (21) including a plurality of circulating conveyor belts (23) disposed over one another over the entire length of the slip incubator cart (21), said slip incubator cart (21) sur-

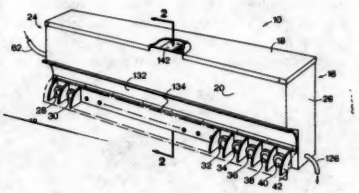
rounded alongs its path of travel inside said oven chamber (22) by said tunnel-form jacket (26) made of good heat conducting sheetmetal or the like.

4,620,505

APPARATUS FOR NURSING SUCKLING ANIMALS

Hugh Thomson, R.R. #1, Pefferlaw, and Michel Gendron, R.R. #1, Thornton, both of Ontario,, Canada

Filed Nov. 5, 1984, Ser. No. 668,468
Claims priority, application Canada, Oct. 12, 1984, 465274
Int. Cl.[4] A01K *5/02, 9/00*
U.S. Cl. 119—51.11 **11 Claims**



8. A self-cleansing system for dispensing liquid nutrients to sucking animals, comprising:

liquid dispensing means for selectively dispensing liquids including a nutrient liquid, a detergent liquid and a rinsing liquid;

nursing means for dispensing the nutrient liquid to the suckling animals, the nursing means including

(a) a plurality of artificial nipples,

(b) inlet means for receiving liquids dispensed from the liquid dispensing means,

(c) liquid distribution means communicating with the inlet means for distributing the liquids received to the artifical nipples,

(d) drainage conduit means for draining liquids from the liquid distribution means and the artificial nipples,

(e) drainage valve means for regulating drainage of liquids by the drainage conduit means,

(f) guard means for controlling access to the artificial nipples by the suckling animals, the guard means being actuable selectively to obstruct access to the artificial nipples and to permit access to the nipples;

control means for use in selectively actuating the liquid dispensing means, the drainage valve means and the guard means.

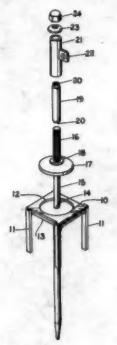
4,620,506

ROTATABLE ANIMAL TETHERING DEVICE

Harold L. Stubbs, 115 Riverview Dr., Hebron, Ky. 41048

Filed Feb. 11, 1985, Ser. No. 700,523
Int. Cl.[4] A01K *3/00*
U.S. Cl. 119—117 **1 Claim**

1. A rotatable animal tethering device comprised of a first part including a flat bed member, legs on said flat bed member adapted to penetrate the ground, an annular opening in said flat bed member, and a plate secured to the underside of said flat bed member and extending under all of said annular opening, said plate having an orifice therein centrally of said annular opening; and a second part including a round stake threaded at one end, a collar threaded onto said stake, a tube secured to said stake above said collar, and a cylinder telescopically fit over said tube and rotatable thereabout, said tube being secured to said stake by means of a pair of internally threaded whiz nuts, one said nut being secured in each end of said tube, each said nut having a flange abutting its respective end of said tube, and both said nuts being in threaded engagement with the threaded end of said stake, a lug extending from said cylinder and to which an animal's tether may be secured, and means to hold said cylinder on said stake while permitting rotation of said cylinder; a bottom washer on said stake and engaging said collar and the flange of the lower whiz nut, and a top washer on said stake and engaging the flange of the upper whiz nut, the distance between said washers being greater than the length of said cylinder, and said means to hold said cylinder on said stake about said tube nad between said washers comprising



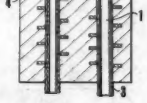
a nut threaded on the uppermost end of said stake and engaging said top washer; said first part and said second part being assembled so that the lower end of said stake passes just nicely through said orifice into the ground, said legs also penetrating the ground and said plate engaging the ground, and said collar being just nicely received in said annular opening and abutting said plate.

4,620,507

STAVE COOLER

Hiromichi Saito, 4-8-1, Kuzuharahon-machi, Kokuraminami-ku, Kitakyushu-shi, Fukuoka-ken; Hiroto Arata, 207, Oaza Shimookuma, Nakama-shi, Fukuoka-ken; Kazuo Kimura, 3-6-21, Einomaruminami-machi, Yahatanishi-ku, Kitakyushu-shi, Fukuoka-ken; Kazuo Fujisawa, 5-12, Tenjin-machi, Yahatahigashi-ku, Kitakyushu-shi, Fukuoka-ken, and Fumihiro Yamamoto, 2-6-1, Ichieda, Tobata-ku, Kitakyushu-shi, Fukuoka-ken, all of Japan

Filed Mar. 1, 1982, Ser. No. 353,386
Claims priority, application Japan, Mar. 6, 1981, 56-31286
Int. Cl.[4] C21B *7/10;* **F22B** *37/00;* **B22D** *19/00*
U.S. Cl. 122—6 B **32 Claims**



1. A stave cooler comprising a carbon steel cooling pipe having an undulating roughened surface and having a coating of a material selected from the group consisting of zircon, alumina, and chamotte thereon, and a cast steel for preventing fusion damage embedding the cooling pipe therein, said cast steel containing not more than 0.7% C and 10% to 25% Cr.

23. A method for manufacturing a stave cooler, which comprises the steps of roughening the surface of a carbon steel cooling pipe to be embedded, preheating the cooling pipe, applying a coating comprising a material selected from the group consisting of zircon, alumina, and chamotte on the sur-

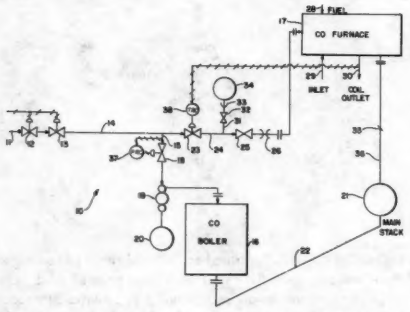
face of the cooling pipe, and casting a molten steel containing not more than 0.7% C and 10 to 25% Cr for preventing fusion loss around the pipe.

4,620,508

GAS DISCHARGE AND/OR DISTRIBUTION SYSTEM

Mark Fligner, Madison, N.J., and Edward C. Luckenbach, Cobham, England, assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Sep. 25, 1985, Ser. No. 779,842
Int. Cl.[4] F22D *1/00*
U.S. Cl. 122—7 R **13 Claims**



1. A system for the substantially unrestricted discharge of a gas selected from hot gas, combustible gas and hot combustible gas from a source of said gas to at least two units of equipment which use the gas, the system comprising at least said two units, temperature-sensing means associated with one unit for generating a signal representative of the temperature of operation of at least part of said one unit, a first conduit for conveying hot and/or combustible gas to said one unit, a first valve means in said first conduit for regulating the gas-flow therethrough to said one unit, means responsive to a signal from the temperature-sensing means to control the position of the first valve means between its maximum open and maximum closed positions in accordance with variations in the said signal, a second conduit connected to the first conduit upstream of the first valve means, said second conduit being connected for conveying gas to a second unit, a second valve means in the second conduit, and means operative to maintain a selected set pressure in the second conduit at a position upstream of the second valve means to control the position of the second valve means between its maximum open and maximum closed positions in accordance with the pressure in the second conduit upstream of the second valve means, and wherein the maximum open position of each valve means permits a selected maximum flow-rate of gas to each respective unit substantially independently of the flow rate to the other unit(s) and the maximum closed position of the valve means permits the substantially unrestricted discharge of gas from the source via at least one valve means.

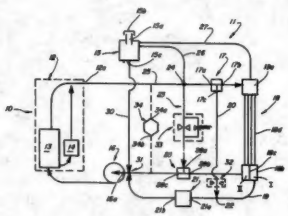
4,620,509

TWIN-FLOW COOLING SYSTEM

John G. Crofts, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed Aug. 5, 1985, Ser. No. 763,021
Int. Cl.[4] F01P *3/12, 5/10*
U.S. Cl. 123—41.1 **13 Claims**

1. A twin flow cooling system for an internal combustion engine; comprising a common source of liquid coolant; a pump having an intake side communicating with said source for circulating said coolant throughout the system; an engine unit having a cooling jacket connected to a discharge side of said pump; a thermostatically controlled primary valve downstream of said engine unit and having an inlet port communicating therewith; a radiator downstream of said primary valve, said radiator having a common inlet header and an outlet header having segregated segments, said radiator inlet header being connected to a first outlet port of said primary valve; a first bypass line having an upstream end connected to a second outlet port of said primary valve; a thermostatically controlled secondary valve having a first inlet port connected to a downstream end of a second bypass line, an upstream end of said second bypass line communicating with the inlet port of said primary valve, said secondary valve having a second inlet port connected to one segment of the radiator outlet header and an outlet port communicating with the intake side of said pump; vent means having at least a portion thereof communicating with the radiator inlet header; and an aftercooler having an inlet side communciating with a second segment of the radiator outlet header and an outlet side communicating with the intake



side of said pump and at a location downstream of said secondary valve, said first bypass line having a downstream end communicating with the inlet side of said aftercooler; said primary and secondary valves coacting with one another whereby when the engine operating temperature is within a first range there is low coolant flow through the primary valve, the first bypass line and the aftercooler and simultaneously therewith full coolant flow through said second bypass line and the secondary valve; when the engine operating temperature is within a second range, there is coolant flow through the second bypass line and secondary valve and simultaneously therewith through the primary valve, through both the first bypass line and one segment of the radiator outlet header and then through the aftercooler; and when the engine operating temperature is within a third range there is coolant flow through the primary valve, through both segments of the radiator outlet header and simultaneously through the secondary valve and the aftercooler.

4,620,510

APPARATUS AND METHOD FOR IMPROVING THE EFFICIENCY OF INTERNAL COMBUSTION ENGINES AND FLUID PUMPING DEVICES

James J. Feuling, 686 Ash Ave., Chula Vista, Calif. 92010

Filed Oct. 24, 1983, Ser. No. 544,738
Int. Cl.[4] F01L *1/08*
U.S. Cl. 123—90.6 **20 Claims**

5. A method for improving the efficiency of an internal combustion engine having power and exhaust operational cycles at least one cylinder with intake and exhaust valve means and intake and exhaust conduit means comprising the steps of:

creating a first positive sonic shock wave in said intake conduit means during the first one quarter of said exhaust cycle prior to the normal opening of said intake valve means according to a predetermined engine timing sequence;

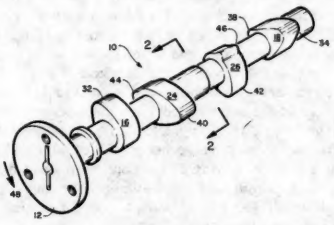
opening said intake valve means according to said predetermined engine timing sequence;

creating a second sonic shock wave in said exhaust conduit means during the last one half of said power cycle prior to

the opening of said exhaust valve means according to a predetermined engine timing sequence; and

opening said exhaust valve means according to said predetermined engine timing sequence;

said first sonic shock wave causes droplets of fuel collected in the intake conduit means to be atomized prior to the air



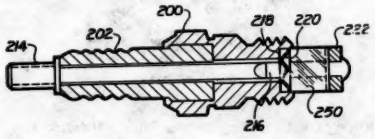
and fuel mixture being pulled through said intake conduit into one of said at least one cylinder and a second negative sonic shock wave produced by said second sonic shock wave reaches said exhaust valve means during its normal predetermined opening, causing the gases of combustion to be aided in their removal from said cylinder into said exhaust conduit means.

4,620,511

GLOW PLUG HAVING A CONDUCTIVE FILM HEATER

Mark A. Brooks, Sterling Heights; Ambrose Tomala, Royal Oak, and Gary L. Casey, Troy, all of Mich., assignors to Allied Corporation, Morristown, N.J.

Division of Ser. No. 430,909, Sep. 30, 1982, Pat. No. 4,545,339.
This application Jun. 11, 1985, Ser. No. 743,249
Int. Cl.[4] F02P *19/02*; F23Q *7/22*
U.S. Cl. 123—145 A **17 Claims**



1. A glow plug of the type having a hollow metal base, and an axial electrode completely passing through said base and electrically insulated therefrom, a heater member electrically located between said base and an end of said axial electrode characterized by:

a planar heater member substrate having opposing surfaces and having at least one end structurally supported by said base, said planar heater member surrounding a portion of said axial electrode;

a conductive surface film heater disposed on at least one of said opposing surfaces having one end in electrical contact with said base and the other end in electrical contact with said end of said axial electrode;

a conductive metal film disposed on said heater element a predetermined distance from each end thereof, said film having a positive coefficient of resistance to limit the temperature produced by said heater in response to an electrical input current; and

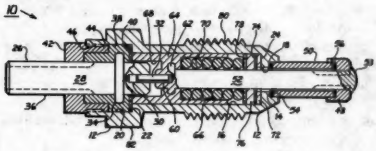
resilient means located between said planar substrate and said base to maintain electrical contact between said base, heater element and end of said electrode with changes in temperature.

4,620,512

GLOW PLUG HAVING A CONDUCTIVE FILM HEATER

Mark A. Brooks, Sterling Heights; Ambrose Tomala, Royal Oak, and Gary L. Casey, Troy, all of Mich., assignors to Allied Corporation, Morristown, N.J.

Division of Ser. No. 430,909, Sep. 30, 1982, Pat. No. 4,545,339.
This application Sep. 13, 1985, Ser. No. 775,873
Int. Cl.[4] F02P *19/02*; F23Q *7/22*
U.S. Cl. 123—145 A **19 Claims**



5. A glow plug of the type having a hollow metal base, and an axial electrode passing through said base and electricaly insulated therefrom, and a heater member electrically connected between said base and said axial electrode, an improved heater member characterized by:

a heater member substrate having at least one end structurally supported by said base, and;

a conductive surface film heater element disposal on at least one surface of said substrate having one end in electrical contact with said base and the other end in contact with said axial electrode;

means for electrically connecting one end of said heater element to said base;

channel means for electrically connecting the other end of said heater element to said axial electrode;

resilient means for urging said heater member substrate toward said channel means to assure said electrical connection is maintained between said base and axial electrode with changes in temperature; and

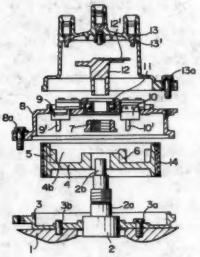
a protective dielectric film disposed over said surface film heater element.

4,620,513

ROTATIONAL POSITION DETECTING DEVICE FOR INTERNAL COMBUSTION ENGINE

Masayasu Ushida, Kariya; Yukio Nakamura, and Kei Abe, both of Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 17, 1985, Ser. No. 810,227
Claims priority, application Japan, Dec. 18, 1984, 59-268062
Int. Cl.[4] F02D *1/00*; F02P *5/00*
U.S. Cl. 123—146.5 A **6 Claims**



1. A device for detecting the rotational position of an internal combustion engine of the type that has a cam shaft extending outwardly from the engine through a wall of the engine block and a rotary member fixed to said cam shaft and driven

therewith by a crankshaft of the engine, said device comprising:

reference position information means and angular position information means both fixed to the end face of said driven rotary member remote from said wall of said engine block so that said reference position and angular position information means are both moved along circular paths when said rotary member is rotated, said reference position and angular position information means being disposed at different radial distances from the axis of said driven rotary member;

a reference position sensor and an angular position sensor respectively disposed to face said circular paths of said reference position and angular position information means;

a housing fixed to said engine block to cover said driven rotary member and support said sensors;

said housing having an end wall formed therein with an opening coaxial with said cam shaft;

said cam shaft having an outer end portion extending outwardly beyond said driven rotary member into and through said opening; and

a bearing mounted in said opening to rotatably receive said outer end portion of said cam shaft and position said housing with respect to said cam shaft.

4,620,514

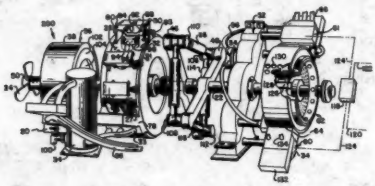
INTERNAL COMBUSTION ROTARY POWER PLANT SYSTEM

Ching-Ho Tseng, #82, Chung-Shan North Road, Section One, 11th Floor, Taipei, Taiwan

Continuation-in-part of Ser. No. 160,628, Jun. 18, 1980, abandoned. This application Aug. 31, 1984, Ser. No. 646,448

Int. Cl.[4] F02B *53/08*

U.S. Cl. 123—202 **8 Claims**



1. In a system having cyclically operating means including:

a rotary power plant adapted for providing power to power-take-off means,

means for fueling the rotary power plant including rotary compressor means for supplying compressed fluid to the rotary power plant,

means for igniting fuel during rotation of the rotary power plant,

means for synchronizing said ignition with rotation of the rotary power plant;

shafting axially connecting the rotary power plant, the rotary compressor means and the power-take-off means, and connecting the means for synchronizing with the rotary power plant,

the improvement comprising:

means for smoothing said cyclical operation of said system including:

said shafting comprising first and second shafts coaxially disposed with a first end of each in proximate relation,

the rotary power plant being on the second shaft,

the rotary compressor means being on the first shaft, damping means connecting said first ends of the first and second shafts, said damping means permitting limited rotation of said first and second shafts relative to each other, the rotary compressor means including first and second rotary compressors, the means for smoothing further comprising the first rotary compressor having means for adjusting compression thereby, the second rotary compressor having connection for receiving compressed fluid from the first rotary compressor and further compressing fluid received from the first rotary compressor before said supplying of compressed fluid to the rotary power plant, said means for adjusting compression comprising a venting valve; a plurality of said venting valves located in spaced circumferential relation on said first rotary compressor, at least one of said venting valves having a cup-like valve body shape with a bottom having a half-disk-like bottom opening and with upward walls extending to a top opening, an ear on either side of the top opening, each ear having a respective slot, each said slot inclined to an axis of the cup-like valve body shape, a valve cylinder in the first rotary compressor, a lever rod in said slots for actuation of said valve body in the valve cylinder, the valve cylinder having a lower end with a half-disk-shaped opening therein, and the valve body having a lower end with a half-disk like closed portion for closing the half-disk-shaped opening.

4,620,515

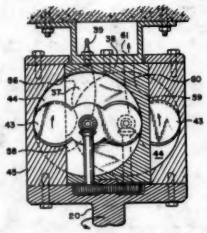
ROTARY FLUID-HANDLING MECHANISM CONSTRUCTED AS AN INTERNAL COMBUSTION ENGINE

Alvaro Marin A., Juan Palau 1845, Santiago, Chile

Continuation-in-part of Ser. No. 628,406, Jul. 6, 1984. This application Dec. 12, 1984, Ser. No. 680,935

Int. Cl.[4] F02B *53/00*

U.S. Cl. 123—233 **16 Claims**



1. Rotary fluid-handling mechanism constructed as an internal combustion engine, comprising a rotor cylindrically recessed internally from one end thereof and provided with power transfer means; a stationary cylinder closely and sealingly fitted within the rotor recess; means for fixedly mounting said cylinder relative to said rotor; means holding said rotor on said cylinder; at least one pair of oppositely disposed, helically oriented cavities in the rotor, opening at the interior cylindrical surface thereof in confronting relationship with the cylindrical surface of said stationary cylinder; at least one corresponding pair of blades independently rotatably mounted within and at diametrically opposite sides of said stationary cylinder on respective axes at right angles to the axis of rotation of said rotor, so portions thereof will enter and pass through the respective cavities during synchronized rotation of said blades and said rotor; means for synchronizing rotation of said blades and said rotor; means for providing inflow of fluid internally of said mechanism into the paths of advancing movement of said blades within said cavities; means for the discharge from the mechanism of fluid acted upon by said blades; a combustion chamber formed within the stationary cylinder and having an inflow port and an outflow port; sealing means provided about the respective blade edges that contact rotor cavity surfaces; means for igniting a gaseous fuel mixture within said combustion chamber; the fluid inflow means comprising an exterior inflow port and an inflow passage leading therefrom to an

interior inflow port at one longitudinal side of the stationary cylinder for introducing a gaseous fuel mixture or air in advance of travel of the blade in a rotor cavity as such cavity passes said interior inflow port; a smaller port at the opposite longitudinal side of said stationary cylinder and leading into said combustion chamber for transferring compressed gaseous fuel mixture or air into said combustion chamber from a rotor cavity as such cavity passes said smaller port; an outlet port in said combustion chamber at said opposite longitudinal side of said stationary cylinder for transferring exploding fuel mixture from said combustion chamber to a rotor cavity as such cavity passes said outlet port; and the means for discharging fluid including an interior exhaust port at said one longitudinal side of the stationary cylinder and a passage leading therefrom to an exterior exhaust port, so expanded gas from rotor cavities that pass said interior exhaust port will exhaust to atmosphere.

4,620,516

APPARATUS FOR INJECTING FUEL INTO COMBUSTION CHAMBERS OF INTERNAL COMBUSTION ENGINES, IN PARTICULAR SELF-IGNITING INTERNAL COMBUSTION ENGINES

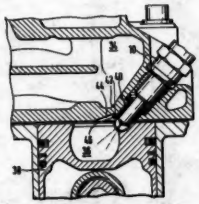
Helmut Reüm, Stuttgart; Thomas Frey, Friolzheim; Werner Grünwald, Gerlingen; Ernst Imhof, Münchingen; Iwan Komaroff, Regensburg; Günther Schmid, Stuttgart, and Kurt Schmid, Ditzingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 504,741, Jun. 16, 1983, abandoned. This application Feb. 21, 1985, Ser. No. 704,135

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1982, 3230387; Mar. 1, 1983, 3307109

Int. Cl.[4] F02P *19/00*

U.S. Cl. 123—275 **27 Claims**



1. An apparatus for injecting fuel into the combustion chamber of a cylinder of self-igniting internal combustion engines, having an injection nozzle, said injection nozzle including an injection port, a glow body disposed downstream of said injection port of the injection nozzle which glow body has a passage, embodied by heatable structures, for heating a fuel injection stream, further having a first conduit surrounding the injection stream and including said passage which discharges into the combustion chamber and further having a second conduit, leading from the combustion chamber to at least one ventilation opening discharging into said first conduit and through which ventilation opening, as a result of injection action, the injection stream aspirates air out of the combustion chamber via the second conduit in which the heatable structures of the glow body are supported by a sheath at least partly forming said first conduit; the injection stream proceeds through said first conduit without touching the glow body; and the aspirated air is heated by said glow body and reaches peripheral zones of the injection stream directly and on all sides in the form of an air envelop.

4,620,517

ENGINE SPEED CONTROL APPARATUS

Mitsuaki Ishii; Masaaki Miyazaki, both of Himeji; Noboru Nakamura, and Hideo Kakinuma, both of Kyoto, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha and Mitsubishi Jidosha Kogyo Kabushiki Kaisha, both of Tokyo, Japan

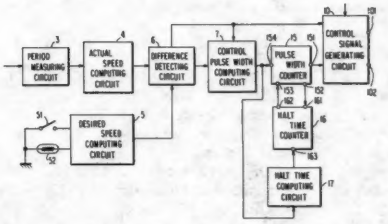
PCT No. PCT/JP83/00207, § 371 Date Feb. 22, 1984, § 102(e) Date Feb. 22, 1984

PCT Filed Jun. 30, 1983, Ser. No. 585,154

Claims priority, application Japan, Jul. 2, 1982, 57-115957; Jul. 2, 1982, 57-115958

Int. Cl.[4] F02D *11/10*

U.S. Cl. 123—339 **8 Claims**



1. An engine speed control apparatus comprising: an actuator for adjusting an engine speed; a first unit for computing a desired engine speed; a second unit for detecting the actual engine speed; a third unit for detecting the difference between the outputs of said first and second units; fourth unit for computing a control pulse width for said actuator in accordance with the output of said third unit; a fifth unit for generating a control signal; a sixth unit for driving said actuator in response to the output of said fifth unit; and a seventh unit for computing an optimal halt time to interrupt the driving of said actuator; wherein said actuator is driven intermittently in conformity in said control pulse width and said halt time.

4,620,518

SYSTEM FOR CONTROLLING THE IGNITION TIMING OF AN INTERNAL COMBUSTION ENGINE

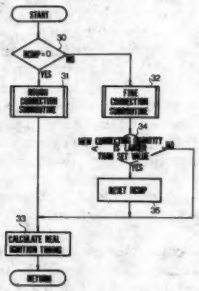
Masaaki Nagai, Fuchu, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 24, 1985, Ser. No. 813,117

Claims priority, application Japan, Dec. 28, 1984, 59-280564

Int. Cl.[4] F02P *5/14;* **F02M** *7/00*

U.S. Cl. 123—425 **3 Claims**



1. A system for controlling the ignition timing of an internal combustion engine having a microprocessor and an ignition timing control device comprising:

sensing means for sensing operating conditions of the engine and for producing an engine operating condition signal;

a knock sensor for sensing engine knock and for producing a knock signal;

rough correcting means responsive to a start signal and to the engine operating condition signal and knock signal for roughly correcting the ignition timing to a desired ignition timing and for producing a completion signal when the correction reaches a complete state;

fine correcting means responsive to the completion signal and to the engine operating condition signal and knock signal for finely correcting the ignition timing by a correcting quantity;

deciding means for deciding a variation of the correcting quantity and for producing the start signal when the correcting quantity becomes larger than a predetermined value, whereby the rough correcting means restarts in response to the start signal.

4,620,519

FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINE

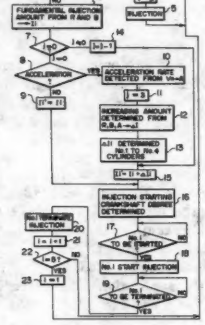
Akihito Nagao; Sadashichi Yoshioka; Hiroyuki Oda, and Takashige Tokushima, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Japan

Filed Dec. 5, 1984, Ser. No. 678,587

Claims priority, application Japan, Dec. 7, 1983, 58-232167

Int. Cl.[4] F02M *39/00*

U.S. Cl. 123—492 **9 Claims**



1. A fuel injection system for an internal combustion engine having a plurality of cylinders, a plurality of separate intake passages for the respective cylinder, and a plurality of fuel injection valves respectively disposed in the intake passages for injecting fuel into the corresponding cylinders, the fuel injection system comprising an airflow sensor for detecting the amount of intake air, acceleration detecting means for detecting acceleration of the engine, engine speed detecting means for detecting the rpm of the engine, a fundemental fuel injection amount determining means for determining a fundamental amount of fuel to be injected for each cylinder according to the outputs of the airflow sensor and the engine speed detecting means, fuel injection amount correcting means for increasing said fundamental amount of fuel when the engine is to be accelerated according to the output of the acceleration detecting means, the fuel injection amount correcting means increasing the fundamental amount of fuel by an increasing amount which differs from cylinder to cylinder taking into account the difference between the actual amount of intake air and output of the airflow sensor, said fuel injection amount correcting means having means for detecting the cylinder whose amount of fuel is to be first increased after acceleration of the engine is detected and said fuel injection amount correcting means gradually increasing, in the firing order, the increasing amount for a predetermined number of cylinders as numbered from said cylinder whose amount of fuel is to be first increased after acceleration of the engine is detected, and then gradually reducing the same for the cylinders to be ignited thereafter, and fuel feeding means for injecting fuel from the injection valve by said fundamental amount when the engine is not to be accelerated and by said fundamental amount increased by said increasing amount when the engine is to be accelerated.

4,620,520

APPARATUS FOR CONTROLLING RECIRCULATED EXHAUST GAS QUANTITIES IN INTERNAL COMBUSTION ENGINES

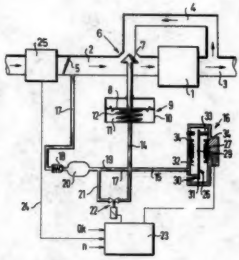
Wolfgang Maisch, Schwieberdingen, and Wolfgang Schäfer, Grossbottwar, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 13, 1985, Ser. No. 733,425

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1984, 3428380

Int. Cl.[4] F02M *25/06*

U.S. Cl. 123—571 **6 Claims**

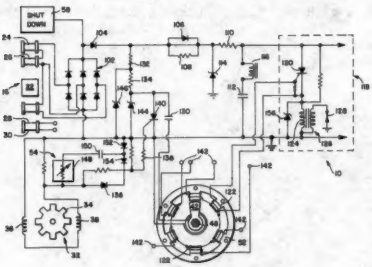


1. An apparatus for controlling the quantity of exhaust gas recirculated from an exhaust system of an internal combustion engine to an intake system including an intake tube thereof comprising an exhaust gas recirculation line connected with said exhaust tube including an exhaust gas recirculation valve, a pneumatically operating final control element provided with a movable part connected to a valve closing member of said exhaust gas recirculation (EGR) valve, said final control element including a work chamber, said work chamber defined on one side by said movable part, and a further part arranged to communicate via a throttle restriction with said intake tube downstream of a throttle valve in said intake tube and via a valve assembly having at least one pressure source, said valve assembly further controllable by control signals of an electronic control unit in accordance with operating variables of said engine, said valve assembly further including an electrofluid converter of a nozzle/bounce plate type, which is located in a flow line adapted to communicate with atmospheric pressure and with said work chamber, whereby control signals of said electronic control unit regulate a pressure difference associated with said control signals between said atmospheric pressure and pressure in said work chamber.

4,620,521
MODULAR, PROGRAMMABLE HIGH ENERGY IGNITION SYSTEM

Robert M. Henderson, Williams Bay, and Richard Zechlin, Beloit, both of Wis., assignors to Colt Industries Operating Corp., New York, N.Y.

Filed Jul. 18, 1984, Ser. No. 631,945
Int. Cl.[4] F02P *1/00*
U.S. Cl. 123—599 **34 Claims**

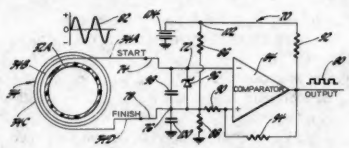


1. An ignition system for providing spark ignition to the cylinders of an internal combustion engine comprising a generator assembly means adapted to be mounted on said engine, said generator assembly means including a magneto means adapted to be driven in response to the operation of said engine to provide output power, said magneto means including a magneto stator having at least one high speed stator coil with a number of coil windings to provide a high voltage output at high speeds of said internal combustion engine, at least one low speed stator coil having a number of coil windings which exceeds those of said high speed stator coil and which provide a high voltage output at low speeds of said internal combustion engine, and a power coil electrically isolated from said high and low speed stator coils, and timing means including at least one rotatable unit driven in timing relationship to the operation of said engine, and a control assembly means removably mounted on said generator assembly means, said control assembly means including ignition control circuit means connected to receive power from said magneto means and operative in response to said timing means to provide spark ignition to specific cylinders of said internal combustion engine, said control assembly means being removable from said generator assembly means without altering the timing relationship between said rotatable unit and said engine.

4,620,522
IGNITION DISTRIBUTOR VOLTAGE GENERATOR

James A. Boyer, R.R. 2, Box 240-B, Anderson, Ind. 46011

Continuation of Ser. No. 649,196, Sep. 10, 1984, abandoned. This application Oct. 11, 1985, Ser. No. 786,367
Int. Cl.[4] F02P *9/00*
U.S. Cl. 123—617 **4 Claims**

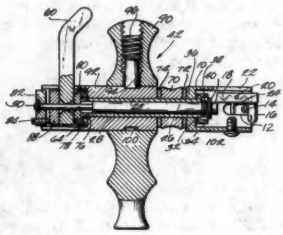


1. A voltage pulse generator and ignition distributor comprising, a base, a shaft rotatably supported by said base, a distributor cap supported by said base having a center electrode and a plurality of circumferentially spaced outer electrodes, a first rotor driven by said shaft formed of electrical insulating material having electrically conductive means connected to said center terminal and a portion that rotates past said outer electrodes, the portion of said electrically conductive means that rotates past said outer electrodes being spaced from said outer electrodes to form a gap therebetween, a voltage pulse generator comprising, a second rotor driven by said shaft, at least one permanent magnet and an annular pickup coil supported by said base, said pickup coil having a plurality of inner turns and a plurality of outer turns, the beginning turn of said inner turns connected to a first lead and the last turn of said outer turns connected to a second lead, said outer turns enclosing said inner turns, and a circuit connected directly between said second lead and ground which is operative to provide a direct conductive path to ground for high frequency energy capacitively coupled to said outer turns from the gap discharge between said electrically conductive means of said first rotor and an outer electrode, said outer turns forming a grounded shield for said inner turns.

4,620,523
ADJUSTABLE GRIP AND TRIGGER BOW STRING RELEASE

Paul L. Peck, Fond du Lac, Wis., assignor to Archery Designs, Inc., North Fond du Lac, Wis.

Filed May 17, 1985, Ser. No. 735,049
Int. Cl.[4] F41C *19/00*
U.S. Cl. 124—35 A **10 Claims**



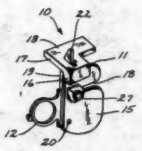
1. A bow string release comprising,
a body having a string receiving notch in one end of said body and an axial hole through the other end of said body,
a sear pivoted in the body adjacent said notch and having string retaining means operative to retain a bow string in said notch when said sear is in its operative position,
handle means having a cylindrical portion with an axial hole therethrough,
sleeve means extending through said axial holes,
an enlargement on each end of said sleeve means capturing said handle means and said body,
pull pin means slidably mounted in said sleeve means for movement between a first position and a retracted position, said pin means engaging said sear in said first position to retain said sear in said operative position and releasing said sear upon movement to said retracted position,
spring means biasing said pin means to said first position,
a trigger carried by said handle means and operative to move said pin means to said retracted position,
said handle means and said body being rotatable relative to each other and relative to said pin means
and grip means connected to said cylindrical portion of said handle means adjusting means allowing adjustment of said grip means relative to said cylindrical portion.

4,620,524

ADJUSTABLE ANCHOR TAB

Charles A. Saunders, 8380-36th Ave., Columbus, Nebr. 68601

Filed May 1, 1985, Ser. No. 729,243
Int. Cl.[4] F41C *19/00*; A41D *45/10*
U.S. Cl. 124—35 A **1 Claim**



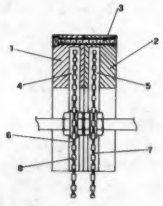
1. An improved archery tab comprising:
a thin flexible member adapted to be disposed between an archer's fingers and a bow string for protection of the fingers while drawing a bow;
means on one side of said member for receivably holding at least one finger of said hand;
arrow contact means on the other side of said member for contact with an arrow nocked onto a bow string;
spacer means attached to an intermediate portion of said member, said spacer means having a surface thereon for abutment with the underside of an archer's chin;
means for adjusting the vertical distance between said surface and said arrow contact means and locking said spacer means with respect to said member;
generally vertically disposed abutment means connected to said spacer means for abutting the side of the archer's chin for insuring that the anchoring point on the archer's face is the same every time that a bow is drawn;
means for adjusting the horizontal position of said vertically disposed abutment means with respect to said surface of the spacer means; and
means for selectively locking the horizontal adjusting means in a desired position.

4,620,525

SOUNDPROOF SHEATH FOR THE PROTECTION OF SAWING CIRCULAR BLADES USED FOR CUTTING MARBLE, GRANITE AND HARD STONE

Marcello Toncelli, Bassano del Grappa, Italy, assignor to Breton S.p.A., Castello di Godego, Italy

Filed Jan. 25, 1985, Ser. No. 694,931
Claims priority, application Italy, Feb. 3, 1984, 85519 A/84
Int. Cl.[4] B28D *1/02*
U.S. Cl. 125—13 R **1 Claim**



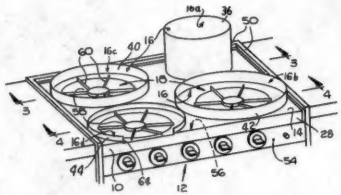
1. A sheath for deadening the sound of circular blades for cutting marble, granite and hard stone which consists of two hollow structures made of "Bakelite" sound deadening material and connected by threaded rods, forming between themselves, two cavities of discoidal shape, the cavities providing a housing for a cutting blade in each cavity, each of said blades rotating within each of said cavities, each of said cutting blades having teeth along the periphery thereof, the said hollow structures having walls of substantial thickness relative to each of said blades, the inner dimensions of said cavities being only slightly greater than the dimensions of said blades and being sufficient to deaden substantially the noise of said blades during operation.

4,620,526

STOVE TOP ATTACHMENT FOR MOBILE VEHICLES

Allen M. Tetschner, 622 E. Loucks St., Sheridan, Wyo. 82801

Filed Oct. 9, 1984, Ser. No. 658,785
Int. Cl.[4] F24C *1/00*
U.S. Cl. 126—56 **1 Claim**



1. A stove top attachment for a stove in a mobile vehicle having a top surface with burners exposed therethrough and adapted for placement thereon of cooking utensils on the burners, comprising
a panel adapted to be placed on the top of the stove, the panel being of stamped sheet metal having a top element of essentially planar shape extending to the side limits of the panel, and downwardly extending integral flanges at its side edges engageable with the side walls of the stove, when the panel is on the stove, to stabilize the panel,
the top element having holes of different sizes therethrough in register with the burners when the panel is in position on the stove,
the panel including upstanding flanges surrounding the holes, operable for retaining utensils in the holes,
the upstanding flanges being separate from the top element and secured to the top element, and of different heights,
one of the holes being adjacent the periphery of the top element with the radius of the hole projected beyond that periphery, but the hole being confined within that periphery and the downwardly extending flange at that location being continuous across the projection of the hole, and
the upstanding flange being cut out correspondingly to the hole but extending more than 180°.

4,620,527

ENDOSCOPE CONTAINER AND SUPPORT APPARATUS

Paul R. Adams, Jr., 600 W. Avalon St., Apt. 275, Longview, Tex. 75603

Filed Jan. 4, 1985, Ser. No. 688,878
Int. Cl.[4] A61L *2/26*; B08B *11/02*
U.S. Cl. 128—4 **14 Claims**

1. A fiberoptic scope container and support apparatus for supporting a fiberoptic scope having a control head and a flexible shaft, comprising;
(a) a container having a rounded bottom and an open top;
(b) closure means closing said open top and an opening in said closure means, said opening communicating with the interior of said container;
(c) support means supporting said container; and
(d) a hollow yoke rest extending through said opening in said closure means, one end of said yoke rest communicat-

ing with the interior of said container and a slot provided in the opposite end of said yoke rest, to receive the control

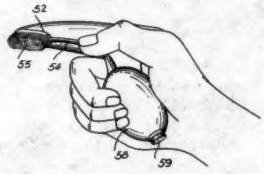
head of the fiberoptic scope and wherein said container is generally tubular in configuration.

4,620,528

FINGER-OPERATED DENTAL CARE IMPLEMENT

Valentim Arraval, 817 Hampton Ct., Westbury, N.Y. 11590

Filed Oct. 2, 1984, Ser. No. 656,872
Claims priority, application Brazil, Aug. 8, 1984, 8404050
Int. Cl.[4] A61H *7/00*
U.S. Cl. 128—62 A **1 Claim**



1. A finger operated article for dental care comprising:

a flexible tube having inner and outer surfaces and a closed end, said tube resembling the finger of a glove and being suitable for wear on the finger of the user;

a dental care implement mounted at the closed end of said tube at a position on the outer tube surface corresponding to the portion of the inner surface coming in contact with the user's fingertip; and

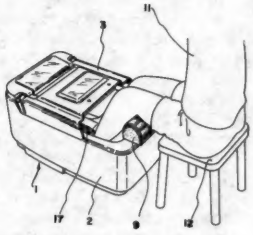
a flexible irrigation tube attached to said implement for delivery of a fluid to said implement at a use point, the irrigation tube being connected to a bulb resevoir for containing said fluid, said irrigation tube being removably attached to said implement and said irrigation tube being substantially located within said flexible tube, and said bulb reservoir forming a handle for holding in the palm of the user's hand, thereby maintaining said flexible tube substantially fixed on said user's finger.

4,620,529

FOOT BATH

Tadashi Kurosawa, Urawa, Japan, assignor to Tensho Electric Industrial Co., Ltd., Tokyo, Japan

Filed Feb. 16, 1984, Ser. No. 580,634
Int. Cl.[4] A61H *29/00*
U.S. Cl. 128—66 **14 Claims**



1. A foot bath comprising:

a foot bath body having a front wall, a rear wall, an inner bottom, an inner front face, and a cover pivotably mounted on the foot bath body, said cover having an underside and an opening for a person's feet to enter into the foot bath body;

jet means, secured to the inner front face of the foot bath body, for injecting foamed hot water onto the person's feet;

foot vibrating means, arranged on the inner bottom of the foot bath body, for massaging soles of the person's feet and for producing waves of the foamed hot water in the foot bath body;

calf vibrating means, mounted on the rear wall of the foot bath body, for massaging calves of the person;

toe stimulating means, provided at the inner front face of the foot bath body, for engaging the person's toes in a bent manner so that vibration is effectively provided to the person's toes;

finger-like pressuring means, arranged on the inner bottom of the foot bath body, for massaging soles of the person's feet; and

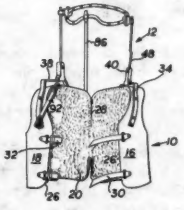
infrared radiation means, secured to the underside of the cover, for providing infrared rays to the person's feet.

4,620,530

HALO TRACTION BRACE

Willard E. Lanier, Houston, Tex., and Juan B. Paez, Spring Arbor, Mich., assignors to Camp International, Inc., Jackson, Mich.

Filed Mar. 6, 1985, Ser. No. 708,738
Int. Cl.[4] A61F *5/04, 5/37*
U.S. Cl. 128—75 **5 Claims**



1. A halo traction brace characterized by its accessibility to the wearer, comfort, stability and effectiveness comprising, in combination, a vest having two relatively rigid torso encircling

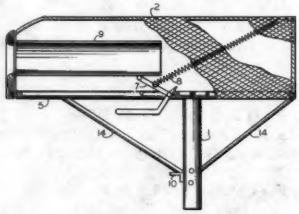
lateral sections each having front, back and side portions, arm openings formed within said side portions, shoulder portions interconnecting said front and back portions of each vest section, each of said sections including a vertical front edge, said front edges forming a vertical front parting line centrally dividing said two sections at the front, each of said sections including a vertical back edge, said back edges forming a vertical back parting line centrally dividing said two sections at the back, fasteners mounted on said sections interconnecting said front and back portions, respectively, by selectively interconnecting said sections at said parting lines wherein said front edges and said rear edges, respectively, are positioned and maintained in adjacent, opposed relationship to each other during normal brace use by said fasteners, a halo ring stabilizing column mounted upon each shoulder portion extending above said shoulder portions, a halo ring attached to said columns, skull engaging means mounted upon said ring directly engaging the wearer's skull means to permit ready access to the wearer's chest while continuously maintaining stability between the halo ring and said vest sections, said last mentioned means including all of said fasteners, said fasteners interconnecting said back portions permitting said vest sections to hinge about said back parting line upon said fasteners interconnecting said front portions being released and said front portions being separated to provide access to the wearer's chest, and column adjustment means formed on said columns permitting said vest front portions to be separated while maintaining stability between said halo ring and said vest sections.

4,620,531

BREEDING PHENOMENON

Jack L. Dyer, Rte. 3, Box 49, Los Lunas, N. Mex. 87031

Filed Oct. 26, 1983, Ser. No. 545,638
Int. Cl.[4] A61F *5/00*
U.S. Cl. 128—79 **3 Claims**



1. An apparatus for securing therein an artificial vagina at a position equivalent to the location of the vagina in a live animal comprising:

a padded animal phantom of suitable size and material having therein means for securing and operating an artificial vaginal mechanism, said means further comprising:

a rigid collar means pivotally mounted at the rear of said phantom;

an open-ended tubular receptacle, rigidly attached at one end of said collar means, said receptacle proper being enclosed within the body of said phantom;

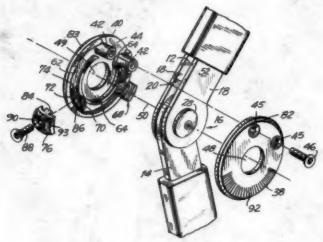
movable lever support means allowing the enclosed end of said receptacle to be repeatedly raised or lowered during collection as said collar means rotates on its pivotal mount so as to allow the tilting of an artificial vagina mechanism which has been secured therein.

4,620,532

ADJUSTMENT DEVICE FOR AN ARTICULATED JOINT BRACE

John R. Houswerth, Bourbonnais, Ill., assignor to Lenox Hill Brace Shop, Inc., New York, N.Y.

Filed Sep. 26, 1983, Ser. No. 536,083
Int. Cl.[4] A61F *5/04, 5/37*
U.S. Cl. 128—80 C **18 Claims**



1. An adjustment device for a brace for an articulated limb, said brace including an upper arm and a lower arm, an end of each said arm being coupled together for pivoting about a joint axis, comprising:

a face member and a back member;

at least two spacers located between said face member and back member separating said members, the space between said members being sufficient to receive therein said arms at said joint axis;

means for holding said face and back members releasably together, separated by said at least two spacers;

means for positioning said face and back members relative to said pivoting joint axis of said brace when said members are held together by said means for holding, separated by said spacers, and have said arms at said joint axis in said space between said face and back members;

a rim extending respectively from at least one of said face and back members;

a pair of slides for releasably clamping said rim at selectable positions along said rim, the angle formed between said pair of slides and said pivoting axis being a variable dependent upon the selected positions for clamping said slides on said rim, and

interengagement means on said rim and said slides for mechanically preventing motion of said slides along said rim when said slides are clamped to said rim, said interengagement means including teeth formed on the mating surface between said rim and said slides, said teeth intermeshing when said slides are clamped to said rim, said teeth being subject to disengagement when said slides are not clamped on said rim.

4,620,533

EXTERNAL BONE FIXATION APPARATUS

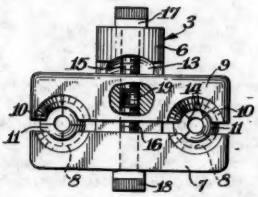
Dana C. Mears, Oakmont, Pa., assignor to Pfizer Hospital Products Group Inc., New York, N.Y.

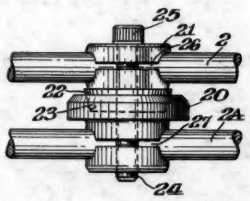
Filed Sep. 16, 1985, Ser. No. 776,259
Int. Cl.[4] A61F *5/04*
U.S. Cl. 128—92 Z **16 Claims**

1. An apparatus for the external fixation and stabilization of a bone fracture, which comprises at least two pins adapted to pass through skin, flesh and bone on opposite sides of the fracture site; at least one first rigid bar having predetermined torsional, flexural and axial stiffness characteristics; at least two pin-to-bar clamps, each connecting at least one of said pins to said bar in a manner such that said clamps are translatable along said bar, the attachment of each of the pins to its associated clamp and of the bar to each clamp being each through an articulating ball which allows universal rotational adjustment of the pin or bar, respectively, each of said clamps comprising a body portion with a first branch connected to a second

branch, an arm located at the terminus of said first branch, said arm extending perpendicularly to the plane of the body portion and having at least one indent, and a capture bar overlying said extending arm, wherein the branches of said body portion embrace the articulating ball which accommodates said rigid bar and the capture bar is provided with at least one indent which is juxtaposed to said indent in said extending arm so that said indents cooperate to accommodate each articulating ball holding a pin; and locking means for locking each pin to each clamp and each clamp to said rigid bar.

10. An apparatus for the external fixation and enhanced stabilization of a bone fracture, which comprises at least two pins adapted to pass through skin, flesh and bone on opposite sides of the fracture site; at least one first rigid bar having predetermined torsional, flexural and axial stiffness characteristics; at least one second rigid bar having similar characteristics to said at least one first rigid bar; at least two pin-to-bar clamps and at least one bar-to-bar clamp, each of said pin-to-bar clamps connecting at least one of said pins to one of said





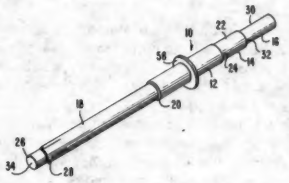
rigid bars in a manner such that said clamps are translatable along said bar or bars, the attachment of each of the pins to its associated pin-to-bar clamp and of each bar to each pin-to-bar clamps being through an articulating ball which allows universal rotational adjustment of the pin or bar, respectively; each of said pin-to-bar clamps comprising a body portion with a first branch connected to a second branch and having an arm located at the terminus of said first branch, said arm extending perpendicularly to the plane of the body portion and having at least one indent; and a capture bar overlying said extending arm, wherein the branches of said body portion embrace the articulating ball which accommodates a rigid bar and the capture bar is provided with at least one indent which is juxtaposed to said indent in said extending arm so that said indents cooperate to accommodate each articulating ball holding a pin; and locking means for locking each pin to each pin-to-bar clamp and each pin-to-bar clamp to each rigid bar; each of said bar-to-bar clamps comprising two separable portions adjustably connected to each other through a taper lock.

4,620,534

APPARATUS FOR INSERTION OF AN INTRAVAGINAL ARTICLE

David L. Zartman, Worthington, Ohio, assignor to New Mexico State University Foundation, Las Cruces, N. Mex.

Filed Nov. 1, 1984, Ser. No. 667,132
Int. Cl.[4] A61F *5/46*
U.S. Cl. 128—127 **18 Claims**



1. An apparatus for insertion of an intravaginal article into a mammalian female, said apparatus comprising

a sleeve having an anterior end and a posterior end, said anterior end being releasably closed,

a tube having an anterior end and a posterior end and being movably received within said sleeve, wherein a force caused by a movement of said anterior end of said tube towards said anterior end of said sleeve opens said anterior end of said sleeve, and

a release means adapted to release an intravaginal article from said tube,

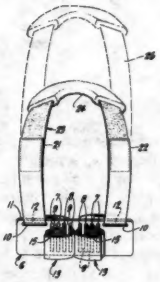
wherein an anterior portion of said sleeve is of such a length as to be insertable within a segment of the reproductive tract of said female that is adjacent to the vulva and an anterior portion of said tube is of such a length as to be insertable within said tract to a point deeper than said segment, such that, when so inserted, contaminants in said segment are not carried to said deeper point by said tube.

4,620,535

IMMOBILIZER FOR A PATIENT

William R. Nesbitt, 6967 Blue Oak La., Loomis, Calif. 95650

Filed Aug. 29, 1984, Ser. No. 645,243
Int. Cl.[4] A61F *13/00*
U.S. Cl. 128—134 **4 Claims**



1. An immobilizing restraint device for use in connection with a lumbar puncture procedure wherein it is necessary to temporarily maintain a patient in a substantially fetal position comprising:

(1) an anchor plate including a generally rigid rectangular body portion;

(2) means defining a first plurality of slotted openings extending through said body portion in generally parallel relation with the short sides of said rectangular body;

(3) means defining a second plurality of slotted openings extending through said body portion in generally parallel relation to the long sides of said rectangular body and generally perpendicular to said first plurality of slotted openings;

(4) a pair of adjustable wrist encircling retention straps entrained through selected ones of said first plurality of slotted openings and configured to encircle and restrain the patient's wrists in close proximity to each other and to said anchor plate;

(5) a pair of adjustable ankle encircling retention straps entrained through selected other ones of said first plurality of slotted openings and configured to encircle and restrain the patient's ankles in close proximity to each other and to said patient's wrists; and

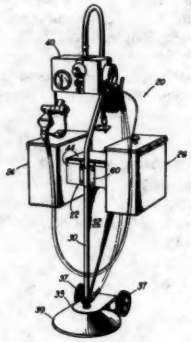
(6) a neck retention strap entrained through said second plurality of openings extending through said body portion and configured to extend around the back of the patient's neck and adjustably maintain the patient's upper body in a position with respect to the patient's arms and legs in a generally fetal position with the spinal column in a generally arched configuration.

4,620,536

MODULAR TRAY ASSEMBLY FOR A RESPIRATORY APPARATUS

Alvin W. Hartley, Sr., Atlanta, Ga., assignor to Gunning Medical Products, Inc., Atlanta, Ga.

Filed May 17, 1985, Ser. No. 735,177
Int. Cl.[4] A62B *7/00*
U.S. Cl. 128—200.24 **8 Claims**



1. Tray assembly for respiratory apparatus or the like comprising

first modular tray means having a plurality of side wall members and a bottom wall member;

first bracket means having a planar support member extending in a vertical plane from said bottom wall member and having a first bracket member disposed at the distal end of said planar support member;

second bracket means connected to at least two of said wall members, said second bracket means having a tapered block shape,

third bracket means connected to one of said side wall members;

second and third modular tray means each having bracket support means secured thereto, said bracket support means having a channel shape complementary to said second bracket means for supporting said second and third modular tray means on opposing side wall members of said first modular tray means; and

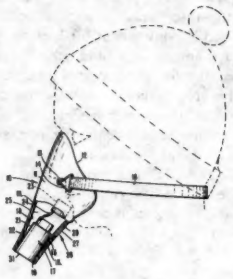
support means extending between said first and third bracket means to support said modular tray means.

4,620,537

COLD WEATHER FACE MASK

Thomas M. Brown, R.R. 12, Box 395, Muncie, Ind. 47302

Filed Mar. 4, 1985, Ser. No. 707,827
Int. Cl.[4] A62B *7/00*
U.S. Cl. 128—201.13 **12 Claims**



1. A breathing mask comprising:

a shell adapted to mounting to the face of an individual to cover the nose and mouth;

a heat and moisture exchange assembly located inside the shell below the wearer's nose and situated for minimum exposure to heat conduction through the shell to the exterior of the mask,

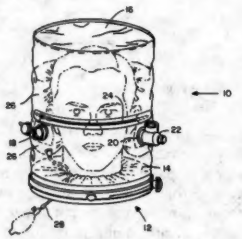
the assembly being elongate and cantilever-mounted to the mask shell, providing a perimetrical space between the shell and the assembly through most of the length of the assembly.

4,620,538

LIGHT-WEIGHT OXYGEN DELIVERY HOOD ASSEMBLY FOR HYPERBARIC CHAMBER

Ewald Koegel, San Antonio, Tex., and Paul J. Sheffield, Beale AFB, Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 19, 1985, Ser. No. 713,666
Int. Cl.[4] A61H *31/00*
U.S. Cl. 128—201.23 **5 Claims**



1. A lightweight therapeutic hood assembly comprising:

(a) a lightweight ring mechanism comprising first and second mating rings rotatably secured to each other for encircling a patient's neck;

(b) a flexible, transparent plastic hood portion attached to one of said rings for enveloping the patient's head;

(c) plastic diaphragm means attached to the other of said rings which in conjunction with relative rotation of said first and second mating rings forms a substantially airtight seal around the patient's neck which, in conjunction with the hood portion, forms a sealed environment around the patient's head;

(d) inflatable bladder means attached to the interior of said hood portion for positioning the patient's head within said hood portion with the diaphragm means secured around the patient's neck ;

(e) a therapeutic gas inlet connected to said hood portion for introducing a pressurized therapeutic gas into said hood assembly containing the patient's head; and

(f) a gas exit connected to said hood portion which promotes circulation of said therapeutic gas through said hood assembly.

4,620,539

PISTOL GRIP, BONE DRILL

E. Trent Andrews, 2 Northgate Dr., San Francisco, Calif. 94127, and Robert E. Moore, 4010 East Ave., Hayward, Calif. 94542

Filed Jul. 11, 1983, Ser. No. 512,175

Int. Cl.[4] A61B *17/00*; A61F *5/04*

U.S. Cl. 128—303 R **10 Claims**

1. A bone drill comprising:

(a) a bitstock having a spindle and a drill chuck at the end of the spindle, said chuck having an outer chuck head and displaceable jaws housed in said chuck head for retaining a drill bit in said chuck, said bitstock having further a hand grip, and a hand crank with a geared connection to said spindle for rotating said spindle, and

(b) a chuck lock mechanism having locking means engageable with said chuck for holding said chuck head to allow displacement of said jaws by use of said hand crank to rotate said spindle, said mechanism having an actuating means located on said bitstock proximate said hand grip for actuating said locking means with the user's hand grip hand without a substantial shift in the gripping position of either of the user's hands when actuating said mechanism and displacing said jaws from the gripping position of the hands used for rotating said spindle.

4,620,540

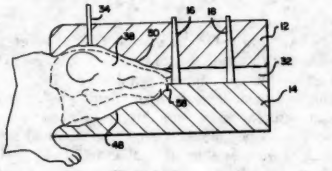
MOLD FOR RAPID STEREOTAXIC INJECTIONS INTO MOUSE STRIATUM

David B. Goodale, Philadelphia, Pa., assignor to Micromedical Research and Development Company, Philadelphia, Pa.

Filed Oct. 17, 1985, Ser. No. 788,346

Int. Cl.[4] A61B *17/00*

U.S. Cl. 128—303 B **10 Claims**



1. A mold for stereotaxic injections into mouse striatum comprising

a lower mold half comprising a lower block having a shaped lower cavity conforming to the shape of the lower half of a mouse head,

the shaped lower cavity being provided with indentations of size, shape and location to receive therein the mouse upper incisors;

a plurality of dowel pins upwardly projecting from the lower block; and

an upper mold half in registry about the lower mold half,

the upper mold half comprising an upper block having a shaped upper cavity conforming to the shape of the upper half of the mouse head,

the upper block being provided with a plurality of openings each located to receive therein respectively one of the said dowel pins; and

at least one needle guide cannula secured in the upper block and extending into the shaped upper cavity;

wherein the needle guide cannula can be secured in the upper mold half in precise registry over a preselected nucleus area in the mouse head.

4,620,541

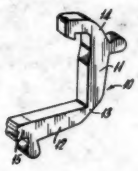
ANNEALED POLYDIOXANONE SURGICAL DEVICE HAVING A RESILIENT PORTION AND AN INTERLOCKING PORTION AND METHOD FOR PRODUCING THE SAME

Arthur A. Gertzman, Bridgewater, and Darrell R. Thompson, Somerville, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

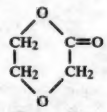
Continuation-in-part of Ser. No. 436,224, Oct. 25, 1982, abandoned, which is a continuation-in-part of Ser. No. 288,275, Jul. 30, 1981, abandoned. This application Aug. 2, 1985, Ser. No. 761,650

Int. Cl.[4] A61B *17/12*

U.S. Cl. 128—326 **8 Claims**

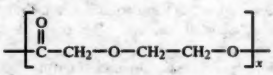


1. A thermally formed, substantialy unoriented, annealed surgical device, said device having a resilient portion which provides the device with tactile properties and an interengaging portion which provides the device with audible properties, said device made of a polymer prepared from a monomer having the formula



said device having a density of at least 1.3845 grams per cubic centimeter, a crystallanity of at least 43% and said device having improved audible and tactile properties.

2. A thermally formed, substantially unoriented, annealed surgical device, said device having a resilient portion which provides the device with tactile properties and an interengaging portion which provides the device with audible properties, said device made from a polymer having units of the formula:



wherein x is the degree of polymerization resulting in a thermally formable device, said device having a density of at least 1.3845 grams per cubic centimeter, a crystallinity of at least 43%, and improved audible and tactile properties.

4,620,542

ETHYLENE-PROPYLENE COPOLYMER SUTURES

Edgar Menezes, Somerville, and Peter Steinheuser, Manville, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Continuation-in-part of Ser. No. 432,487, Oct. 4, 1982, abandoned, and Ser. No. 531,246, Sep. 13, 1983, Pat. No. 4,520,822. This application Sep. 21, 1984, Ser. No. 652,705

The portion of the term of this patent subsequent to Jun. 4, 2002, has been disclaimed.

Int. Cl.[4] A61L *17/00*

U.S. Cl. 128—335.5 **6 Claims**

1. A sterile surgical monofilament suture comprising an ethylene-propylene copolymer, said copolymer containing a small amount of copolymerized ethylene, the balance being copolymerized propylene, said copolymerized ethylene being present in an amount sufficient to impart a significant reduction in Young's Modulus to the suture compared with a comparable propylene homopolymer suture, wherein said copolymer is a block copolymer containing from about 2 to about 15 weight percent polymerized ethylene.

4,620,543

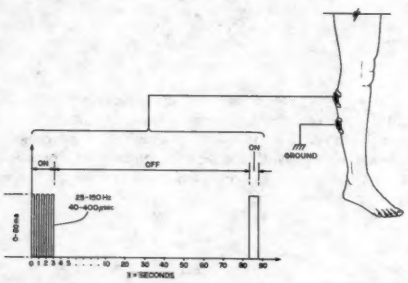
ENHANCED FRACTURE HEALING AND MUSCLE EXERCISE THROUGH DEFINED CYCLES OF ELECTRIC STIMULATION

R. Bruce Heppenstall, Wynnewood, and David W. Shenton, Philadelphia, both of Pa., assignors to Richards Medical Company, Memphis, Tenn.

Filed Jun. 15, 1984, Ser. No. 620,870

Int. Cl.[4] A61N *1/32*

U.S. Cl. 128—419 F **6 Claims**



1. A method of enhancing fracture healing and muscle vitality through on/off duty cycles of electric stimulation comprising:

providing a therapeutic electric charge to a muscle group for an on period of electrical stimulation by applying said electrical stimulation in galvanic power of:

a. pulses at 25 to 150 Hz;

b. having a pulse width of 40 to 400 microseconds; and

c. having an amplitude of current between 0 and 80 milliamps

for a period of 1-3 seconds to substantially deplete the energy of the muscle group;

providing an off period of at least 50 seconds and not more than 110 seconds duration to allow the muscle group to regain a substantial amount of energy depleted during stimulation; and

sequentially applying said on and off duty cycles to such muscle group.

4,620,544

VACUUM EXTRACTOR

Alexander G. B. O'Neil, 102 Lawler Street, Subiaco 6008, Perth, Western Auxtralia, Australia, assignor to Alexander G. O'Neil and Christine O'Neil, both of Perth, Australia

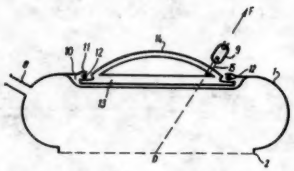
PCT No. PCT/GB81/00094, § 371 Date Jan. 25, 1982, § 102(e) Date Jan. 25, 1982, PCT Pub. No. WO81/03420, PCT Pub. Date Dec. 10, 1981

Continuation of Ser. No. 645,097, Aug. 22, 1984, abandoned, which is a continuation of Ser. No. 355,551, Jan. 25, 1982, abandoned. This PCT application May 28, 1981, Ser. No. 761,678

Claims priority, application United Kingdom, May 29, 1980, 8017621

Int. Cl.[4] A61B *17/42*

U.S. Cl. 128—352 **5 Claims**



1. A vacuum extractor for use in childbirth, comprising:

a cup-shaped member having a lip, said cup-shaped member when in use forming an air-tight seal around said lip on the scalp of the child;

means disposed in said cup-shaped member through which its interior can be evacuated when in use;

adaptor means comprising an arcuate rod having first and second ends;

means for rotatably attaching said first and second ends of said arcuate rod to said cup-shaped member at diametrically opposed locations, whereby said arcuate rod describes a part-spherical locus, said rod extending rigidly from said attaching means; and

connection means for transferring an applied force to said cup-shaped member, said connection means being freely movable on said arcuate rod, whereby the line of force exerted on said cup-shaped member through said connection means passes through or adjacent to the center of a closed figure defined by said lip of said cup-shaped member over a range of angles between the line of force and a line normal to a plane containing the closed figure.

4,620,545

NON-INVASIVE DESTRUCTION OF KIDNEY STONES

William R. Shene, Plattsburgh, N.Y.; Christopher Nowacki, Arlington Heights, and Alfred G. Brisson, Schaumburg, both of Ill., assignors to Trutek Research, Inc., Arlington Hts., Ill.

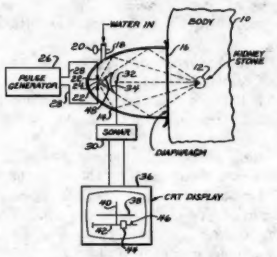
Filed Oct. 31, 1984, Ser. No. 666,770

Int. Cl.[4] A61B *17/22*

U.S. Cl. 128—328 **5 Claims**

1. Apparatus for the non-invasive disintegration of concretions such as kidney stones within a living body, comprising means including a focusing reflector comprising a portion of an ellipsoid open at one end and having a first focus point within said reflector and a second focus point outside of said reflector positioned beyond said open end adapted to contain a fluid such as water within said reflector, a fluid retaining diaphragm closing said open end and unobstructed opposite to said reflector and substantially engaging said body, said reflector being movable relative to said body, sonic aiming means physically connected to said reflector and capable of detecting a concretion within the body for aiming said reflector at said concretion upon movement of said reflector to bring said second focus point into coincidence with said concretion, and spark gap means in said reflector at said first focus point for generating a

shock wave which will travel through said fluid, said diaphragm and through said body to disintegrate said concretions,



said sonic aiming means further including a sonic transducer and a second reflector therefor within said first-mentioned reflector forwardly of said first focus point.

4,620,546

ULTRASOUND HYPERTHERMIA APPARATUS

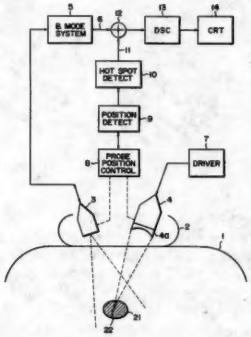
Satoshi Aida, Yokohama; Kenzo Matsumoto, Tokyo; Ayao Itoh, Yokohama; Yoshinori Suzuki, Yokohama, and Kinya Takamizawa, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 27, 1985, Ser. No. 749,546

Claims priority, application Japan, Jun. 30, 1984, 59-135949; Jun. 30, 1984, 59-135973; Jun. 30, 1984, 59-135975

Int. Cl.[4] A61B *10/00*

U.S. Cl. 128—660 **13 Claims**



1. An ultrasound hyperthermia apparatus comprising:

a tomographic ultrasound probe for irradiating a living organism with ultrasound and for receiving reflected ultrasound therefrom in order to obtain a tomographic image of the living organism;

a heating applicator for irradiating a desired portion in the living organism with focused ultrasound so as to heat the desired portion;

tomographic image signal generating means, coupled to said tomographic ultrasound probe, for generating a tomographic image signal representative of reflected signal intensity of said reflected ultrasound;

focusing point detecting means, coupled to said heating applicator, for detecting the position of a focusing point of the heating ultrasound to generate a focusing point position information signal indicating the position of the focusing point of the ultrasound; and

tomographic image display means, coupled to said focusing point detecting means and said tomographic image signal generating means, for displaying the tomographic image and the focusing point of the ultrasound in the tomographic image.

4,620,547

INSTRUMENT FOR SAMPLING TISSUE SPECIMENS

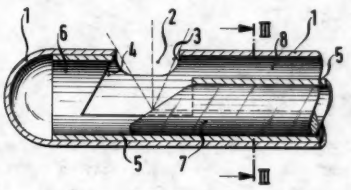
Manfred Boebel, Oetischeim, Fed. Rep. of Germany, assignor to Richard Wolf GmbH, Knittlingen, Fed. Rep. of Germany

Filed Dec. 28, 1984, Ser. No. 687,195

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1983, 3347671

Int. Cl.[4] A61B *6/00*

U.S. Cl. 128—754 **4 Claims**



1. An instrument for sampling tissue specimens under constant visual inspection comprising a hollow outer shaft enclosing an axial passage and having a closed distal end, said shaft having a lateral aperture adjacent said closed distal end with a proximal edge of said aperture forming a first cutting edge, an inside shaft having a first portion of a smaller diameter than the inner diameter of the outer shaft, means for mounting the inside shaft within the outer shaft with the first portion being eccentrically positioned in the outer shaft, said means enabling axial reciprocal movement between the inside and outer shafts, said inside shaft having an optical system having a portion terminating adjacent a distal end of the first portion of the inside shaft to enable viewing through said aperture, an outer surface of the first portion of the inside shaft and the inner surface of the outer shaft form a space therebetween, said space having means for connecting to a source of suction to form an extraction channel, an enlarged annular ring-shaped portion forming an annular cutter having a diameter corresponding to the inner diameter of the outer shaft with one edge of the cutter forming a second cutting edge cooperating with the first cutting edge, said annular cutter being connected to a distal end of the first portion of the inside shaft and means for shifting the inside shaft relative to the outer shaft so that axial movement of the inside shaft to shift the first and second cutting edges together will cut a specimen extending through said aperture.

4,620,548

PAP SMEAR T-ZONE SAMPLER

Robert Hasselbrack, Seattle, Wash., assignor to Accupap, Inc., Seattle, Wash.

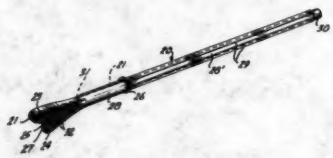
Continuation of Ser. No. 405,783, Aug. 6, 1982, abandoned, which is a continuation-in-part of Ser. No. 152,375, May 22, 1980, abandoned, which is a continuation-in-part of Ser. No. 142,254, Apr. 21, 1980, abandoned. This application Jan. 23, 1985, Ser. No. 693,830

Int. Cl.[4] A61B *10/00*

U.S. Cl. 128—758 **17 Claims**

1. A sampling instrument for collecting cells exfoliated from the uterine cervix of a woman and having a horizontally elongated aspirator tube with respective proximate and distal ends, the distal end portion of the tube being insertable into the aperture of the cervix and having a portion flattened to form a lateral lobe projecting downward transversely of the length of the tube for engagement against the vaginal ring of the cervix, the tube having a through bore enabling mucus in the endocer-

vical canal to be sucked into such bore, characterized by the flattened portion of the distal end portion of the tube forming a scraper having the combination of: a flattened frontal lobe including a blunt-nosed, convexly rounded distal tip portion insertable into the aperture of the cervix, the tube bore opening substantially at the periphery of said blunt-nosed, convexly rounded distal tip portion, and said frontal lobe projecting forward from the lateral lobe a distance sufficient to position said bore opening at approximately the external os when the lateral lobe is in engagement with the vaginal ring of the cervix; a concave transition section disposed between and joining the upper portion of the lateral lobe and the proximate portion



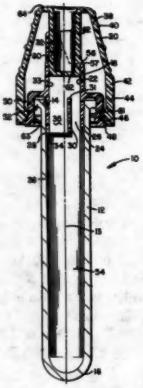
of said frontal lobe; a blunt scraping edge engageable with the inner margin of the vaginal ring of the cervix and positioned to extend across the area of the transformation zone when the lateral lobe is engaged against the vaginal ring of the cervix, said blunt scraping edge forming the distal edge of the lateral lobe, the outer edge of said transition section and the bottom edge of said frontal lobe; and at least one substantially planar upright lateral side offset from the tube bore and forming with said scraping edge an angular junction enabling collection of a scraping sample of exfoliated cells from the transformation zone while the distal tip portion of the tube is inserted for collection of an aspiration sample.

4,620,549

BLOOD COLLECTION ASSEMBLY

Edward L. Nugent, Caldwell, N.J., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Jan. 25, 1985, Ser. No. 695,121
Int. Cl.[4] A61B *5/00*
U.S. Cl. 128—763 **14 Claims**



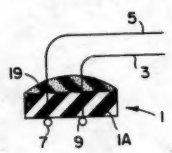
1. A blood collection assembly characterized by
(a) a tube-shaped container;
(b) said container having a closed end and an open end;
(c) a blood collector mounted on said open end, said collector including
(1) a substantially tubular collector body having a tubular flow passage therethrough;
(2) said body extending from a puncture wound engaging front end surface to a blood discharge rear end surface;
(3) means on said body for attaching said body to said open end of said container;
(4) vent means in said body for air displacement therethrough;
(5) said front end surface being tapered and having a large circumferential extent;
(d) a removable cap connected to said container for mounting on said blood collector for closing the front end thereof;
(e) two-position cooperating locking means on said blood collector and said cap for removably holding said cap on said collector in a first position and for permanently locking said cap on said collector in a second position; and
(f) said two-position cooperating locking means including
(1) a first annular abutment on said blood collector body, said first annular abutment extending outwardly from said body;
(2) a second annular abutment on said cap, said second annular abutment extending inwardly from said cap; and
(3) a tapered surface on said second annular abutment for camming said second abutment over said first abutment into said permanent locking second position of said cap on said collector.

4,620,550

IMPLANTABLE BIPOLAR STIMULATING ELECTRODE

Charles M. Doroshuk, Livingston, N.J., assignor to Schering A.G., Berlin, Fed. Rep. of Germany

Filed Apr. 15, 1985, Ser. No. 723,389
Int. Cl.[4] A61N *1/18*
U.S. Cl. 128—785 **8 Claims**



1. A bipolar electrode member specifically for attachment to a heart by suturing, the electrode comprising:
a disc of bio-compatible, electrically insulating material, the disc having first and second opposed surfaces, a selected thickness and an edge surface joining the first and second surfaces;
a pair of spaced bores extending through the disc from the first surface to the second surface;
a wire extending through each bore, each wire terminating in a bead disposed on the second surface of the disc and projecting therefrom to form a pair of spaced electrodes, and
means on the first surface for securing the wires to the disc.

4,620,551

APPARATUS FOR MANUALLY FILLING CIGARETTE TUBES

Heinrich W. Ruppert, Trossingen, and Klaus Gätschmann, Bad Dürrheim, both of Fed. Rep. of Germany, assignors to Efka-Werke Fritz Kiehn GmbH, Trossingen, Fed. Rep. of Germany

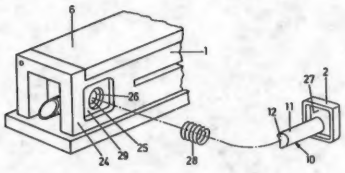
Filed Dec. 10, 1984, Ser. No. 680,603
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1983, 3344682
Int. Cl.[4] A24C *5/42*
U.S. Cl. 131—75 **10 Claims**

1. A manual apparatus for filling a cigarette tube with tobacco, in particular filter cigarette tubes, comprising:

a casing having a tobacco compressing chamber disposed longitudinally of said casing;

a coverlike pressing bar associated with said tobacco compressing chamber and located in a cover covering, and hinged to, the casing;

a short socket disposed in said casing for holding an empty cigarette tube;



an ejector pusher for introducing a pressed plug of tobacco into a cigarette tube retained on said short socket by intermittent clamping; and

a spring-loaded clamping element for retaining the cigarette tube pushed onto the short socket, said clamping element being independent of said cover and pusher, and being urged by a manual pushbutton into its retaining location laterally of said short socket.

4,620,552

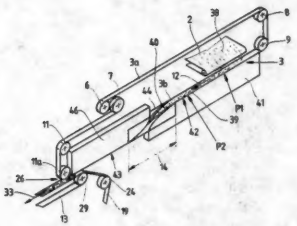
METHOD AND APPARATUS FOR MAKING AND MANIPULATING STREAMS OF FIBROUS MATERIAL

Alfred Hinzmann, Weams, Va., assignor to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

Filed Jun. 11, 1985, Ser. No. 743,672

Int. Cl.[4] A24C *5/18*

U.S. Cl. 131—84.3 **20 Claims**



1. A method of producing and manipulating a stream of particulate material of the tobacco processing industry, such as a stream of tobacco particles, comprising the steps of establishing an elongated path; feeding particulate material into a first portion of said path and advancing the material in a predetermined direction longitudinally of said path so that the material grows into an elongated stream; moving the stream longitudinally of said path in said direction; and simultaneously twisting successive increments of the moving stream through a predetermined angle into a spiral in a second portion of said path about an axis which extends in said direction, said second portion being located downstream of the first portion of said path as considered in said direction.

9. Apparatus for producing and manipulating a stream of particulate material of the tobacco processing industry, particularly a stream of tobacco particles, comprising an endless foraminous belt conveyor having an elongated reach; means for driving said conveyor so that said reach advances in a predetermined direction; means for establishing a pressure differential between the opposite sides of said reach; means for twisting an intermediate portion of said reach through a predetermined angle into a spiral about an axis which extends in said direction; and means for feeding particulate material to one side of said reach upstream of said intermediate portion so that the material adheres to said reach due to the establishment of said pressure differential and forms a stream successive increments of which are twisted through said angle by the intermediate portion of said reach.

4,620,553

TOBACCO SMOKE FILTERS

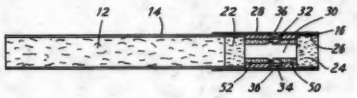
Christopher R. Bale, Keynsham, and Beresford R. Gill, Paulton, Nr. Bristol, both of England, assignors to Imperial Group Public Limited Company, London, England

Filed May 14, 1985, Ser. No. 733,857

Claims priority, application United Kingdom, May 22, 1984, 8413017; May 22, 1984, 8413018

Int. Cl.[4] A24D *3/04*

U.S. Cl. 131—198.1 **13 Claims**



1. For attachment to a rod of smokable material, an improved filter assembly of the type, wherein ventilation is provided for a cavity associated with the rod so that combustion products from said rod are intermingled with ventilation air in said cavity before proceeding to a user, the improvement comprising,

(a) first and second axially spaced cylindrical filter plug elements,

(b) a cylindrical tube of air-impervious material open at both ends connecting said filter elements and in axial alignment with said filter elements, the tube including at least one ventilating aperture therein,

(c) a tipping wrapper encasing the cylindrical surfaces of the filter elements and the tube, and including ventilation means overlying said at least one ventilating aperture, and,

(d) resilient valve means for preventing the passage of ventilating air through said at least one ventilating aperture when a predetermined pressure differential between the ventilating air flow through said at least one ventilating aperture and the flow of combustion products through the tube is exceeded, and for permitting the passage of ventilating air through said at least one ventilating aperture when said pressure differential is not exceeded, said resilient valve means being movable between a first position in which the flow of ventilating air through said ventilation aperture is permitted and a second position in which the flow of air through said ventilation aperture is prevented, said valve means being resiliently biased towards said first position and being displaceable towards said second position when said pressure differential is exceeded.

4,620,554

MODERATING AGENT OF CIGARETTE TASTE

Yoshimitsu Horimoto, Osaka, Japan, assignor to Luxeord Co., Ltd., Osaka, Japan

Filed Jul. 26, 1984, Ser. No. 634,427

Int. Cl.[4] A24F *47/00*

U.S. Cl. 131—270 **2 Claims**

2. A cigarette containing a flavor-enhancing portion attached to one end thereof, said flavor enhancing portion comprising

a substance selected from the group consisting of ascorbic acid, it isomer and the salts thereof, present in an amount of 10 to 30% by weight,

encapsulating powder of vegetable oil or fats, present in an amount of 30 to 50% by weight,

powder of dried comfrey leaves, present in an amount of 5 to 20% by weight,

at least one substance selected from the group consisting of wheat protein and soybean protein, present in an amount of about 10 to 30% by weight,

beefsteak plant, present in an amount of 5 to 25% by weight, and

at least one substance selected from the group consisting of Japanese mint, natural peppermint and vanilla present in an amount of 1 to 10% by weight.

4,620,555

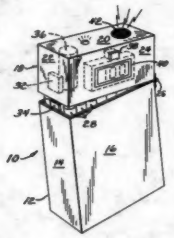
CIGARETTE DISPENSER

Eitan D. Schwarz, 988 Oak Dr., Glencoe, Ill. 60022

Filed Oct. 11, 1983, Ser. No. 540,680

Int. Cl.[4] A24F *15/00*

U.S. Cl. 131—270 **15 Claims**



1. A cigarette dispenser comprising:

a rectangularly-shaped case having an open end for receiving and storing a plurality of cigarettes;

a lid pivotally coupled to said case adjacent the open end thereof for enclosing said cigarettes within said case;

latch means coupled to said case and to said lid for sensing when said lid is in a closed position;

alarm means coupled to said latch means and responsive to the state of said latch means for generating an audio signal when said latch means is opened;

first user selectable switch means;

first timer means coupled to said first switch means and responsive to the selection of said first switch means for initiating the countdown of a first time period and for generating an output signal following said countdown; and

override means coupled to said alarm means and to said first timer means and responsive to said output signal for defeating said alarm means and eliminating said audio signal if said latch means is opened following the countdown of said first time period.

4,620,556

LOOSE LEAF CHEWING TOBACCO

William M. Rosson, Memphis, and William G. Dean, Germantown, both of Tenn., assignors to Conwood Corporation, Memphis, Tenn.

Filed Apr. 12, 1983, Ser. No. 484,266

Int. Cl.[4] A24B *5/06, 3/07, 5/04*

U.S. Cl. 131—313 **12 Claims**

1. A method for producing loose leaf chewing tobacco, comprising:

providing loose destemmed and threshed tobacco leaves from which essentially only the main stem of said tobacco leaves have been removed, said stemmed and threshed loose-leaves containing veins or stems in excess of 0.75 inches in length or 0.02 inches in diameter;

passing said loose leaves through a multi-bladed rotary cutter to produce cuts uniformly spaced from one another a maximum of about ¼ inch, to produce loose cut leaves of relatively uniform size, the cuts extending largely across the tobacco veins;

casing said loose, rotary-cut leaves with a casing mixture; and

drying said loose, cased leaves to form a loose leaf tobacco product;

so as to effectively diminish the perception of veins by a user.

4,620,557

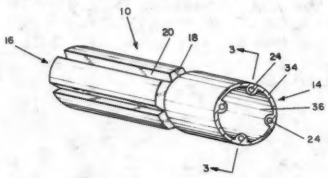
CIGARETTE HAVING A MOUTHPIECE AND METHOD OF MAKING SAME

Daniel V. Cantrell, Prospect; Dale A. Halverstadt, and David L. Gordon, both of Louisville, all of Ky., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Dec. 5, 1983, Ser. No. 558,245

Int. Cl.[4] A24D *3/04, 3/02*

U.S. Cl. 131—336 **20 Claims**



1. A cigarette comprising:

a generally cylindrical tobacco column;

a generally cylindrical impermeable mouthpiece having an upstream end and a mouth end, the mouthpiece being located with the upstream end in coaxial abutment with one end of the tobacco column;

an annular groove formed in the peripheral surface of the mouthpiece;

a plurality of longitudinal grooves formed in the peripheral surface of the mouthpiece extending generally longitudinally of the mouthpiece from the annular groove to the mouth end of the mouthpiece;

a plurality of smoke flow capillaries formed through the mouthpiece from the upstream end to the mouth end thereof such that each capillary has an open smoke inlet at the mouthpiece upstream end and an open smoke outlet at the mouth end of the mouthpiece;

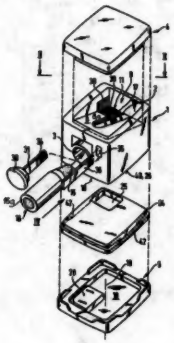
each capillary having a first flow section generally parallel to the longitudinal axis of the mouthpiece extending from the upstream end of the mouthpiece to a location near the annular groove, a second flow section extending from the first capillary section beneath and across the width of the annular groove angled relative to the longitudinal axis of the mouthpiece, and a third flow section extending from the second capillary section at a location near the annular groove to the mouth end of the mouthpiece; and,

air permeable tipping material circumscribing the mouthpiece and overlapping a portion of the tobacco column adjacent the mouthpiece.

4,620,558
DEVICE FOR SHAVING JACKETED STICKS

Werner Lüttgens, Erlangen, Fed. Rep. of Germany, assignor to A. Klebes GmbH & Co. KG Kunststoff- und Metallwarenfabrik, Erlangen, Fed. Rep. of Germany

Filed Feb. 4, 1983, Ser. No. 464,026
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1982, 3204927
Int. Cl.[4] A45D *40/00*
U.S. Cl. 132—79R **18 Claims**



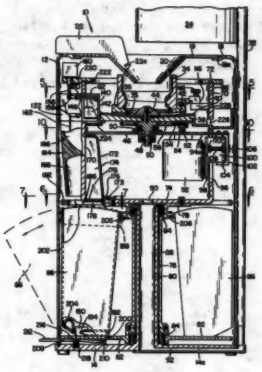
1. A device for shaving jacketed sticks comprising
(a) a housing block;
(b) a shaving knife supported in the housing block;
(c) means defining an orifice in said housing block for introducing a jacketed stick and bringing it in contact with said shaving knife;
(d) first and second chambers in said housing block for receiving, respectively, jacket shavings and material removed from the stick;
(e) a septum in said housing block; said septum separating said first and second receiving chambers from one another;
(f) a connecting opening in said septum connecting said first and second receiving chambers with one another; and
(g) a screen traversing said connecting opening; said screen preventing shavings from passing from said first receiving chamber through said connecting opening into said second receiving chamber.

4,620,559
HIGH-SPEED COIN-SORTING AND COUNTING APPARATUS

Roger K. Childers, and James R. Burt, both of Multnomah County, Oreg., assignors to Childers Corporation, Wilsonville, Oreg.

Filed Oct. 9, 1984, Ser. No. 658,534
Int. Cl.[4] G07D *3/16*
U.S. Cl. 133—3 A **45 Claims**

34. A coin-sorting and counting apparatus, comprising:
means for continuously and completely sorting and counting a batch of coins by denomination;
first coin-collecting means for collecting preselected numbers of said sorted coins of said batch according to denomination, and for selectively removing said collected coins from the apparatus;
second coin-collecting means for collecting and releasably holding said sorted coins of said batch in excess of said preselected numbers according to denomination;
means for selectively controlling each of said second coin-collecting means to substantially simultaneously transfer said collected excess coins of said batch from said second coin-collecting means into said first collecting means according to denomination after removal from the apparatus of said preselected numbers of coins collected by said first coin storage means; and
coin receiver means for receiving said sorted and counted coins according to denomination, and for selectively diverting said coins to said first or second coin-collecting

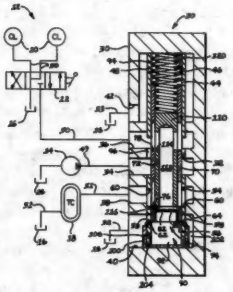


means according to denomination, said coin receiver means first diverting said coins to said first collecting means and in response to said preselected numbers of coins being counted by said sorting and counting means, diverting said coins in excess of said preselected numbers to said second coin-collecting means.

4,620,560
MODULATING RELIEF VALVE WITH DUAL FUNCTIONING LOAD PISTON

Alan R. Coutant, Chillicothe, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed May 6, 1985, Ser. No. 730,887
Int. Cl.[4] F16K *11/10*
U.S. Cl. 137—116 **11 Claims**



1. A modulating relief valve, comprising:
a housing defining a single bore;
a dump valve, a load piston, and a relief valve spool each concentrically disposed in the single bore of the housing;
the dump valve being slidably disposed in the single bore of the housing and defines a bore with the load piston slidably disposed in the bore of the dump valve;
the load piston defines a bore with the relief valve spool slidably disposed in the bore of the load piston; and
the load piston, the dump valve, and the relief valve spool each being movable relative to the other and the interface of the load piston with each of the dump valve and the

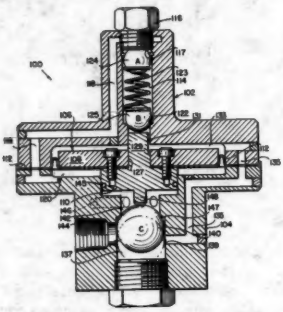
relief valve spool controls fluid flow when fluid flow is present.

4,620,561

DIFFERENTIAL PRESSURE CONTROL VALVE

Donaldee Brewer, Muscatine, Iowa, assignor to Bandag Licensing Corporation, Muscatine, Iowa

Filed May 20, 1985, Ser. No. 736,039
Int. Cl.[4] G05D *16/00*
U.S. Cl. 137—116.3 5 Claims



1. A differential pressure control valve enabling the control of a fluid circuit when the pressure of the fluid passes through the valve to control a predetermined pressure differential between the entering pressure and the exiting pressure, comprising:

(a) a top cap member with a low pressure chamber in its lower surface,

(b) a bottom cap member with a high pressure chamber in its upper surface,

(c) a piston assembly positioned in said low and high pressure chambers with a diaphragm member that separates said chambers,

(d) said entering pressure enters said top cap and is ported to said high pressure chamber,

(e) a delay pressurization means to port said entering pressure to said low pressure chamber,

(f) said piston assembly having a larger surface area in the low pressure chamber than in the high pressure chamber,

(g) said delay pressurization means is positioned in a control chamber in said top cap that ports said entering pressure to said low pressure chamber,

(h) said means includes an inlet ball adjacent in inlet seat and a control ball adjacent a control seat,

(i) said means includes a force spring between said inlet and control balls which urges them towards their adjacent seats,

(j) said piston assembly having a ball activator shaft to act on said control ball and move it off the control seat when the low pressure chamber has a pressure below the predetermined pressure differential,

(k) said inlet ball will move off the inlet seat when the entering pressure exceeds the preselected pressure of the force spring, and

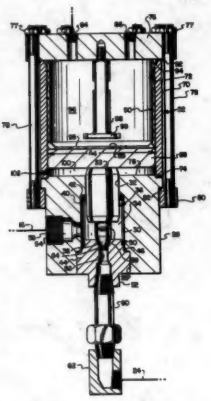
(l) when said inlet ball and control ball are off their seats, the entering pressure passes to the low pressure chamber until the said predetermined pressure differential is met and the said ball activator shaft moves away from the control ball permitting it to contact the control seat closing off any flow from the entering pressure to the low pressure chamber.

4,620,562

HIGH PRESSURE REGULATOR VALVE

Amos Pacht, Houston, Tex., assignor to Butterworth, Inc., Houston, Tex.

Continuation of Ser. No. 425,521, Sep. 28, 1982, abandoned. This application Oct. 19, 1984, Ser. No. 663,811
Int. Cl.[4] F16K *43/00*
U.S. Cl. 137—315 10 Claims



1. A pressure regulating valve for regulating relatively high hydraulic fluid pressures in the range of at least 10,000 psig to 20,000 psig in a fluid supply conduit of a hydraulic jet blasting system to minimize pressure variation in said conduit resulting from changes in hydraulic fluid flow through said system, said regulating valve comprising a body having a first bore defining a flow chamber, an inlet passage in communication with said flow chamber and adapted to be connected to said conduit, valve seat means comprising a seat member member threadedly engaged with a cooperating threaded portion of said body forming a second bore, said seat member having an outlet passage opening into said flow chamber and having a portion forming a frusto-conical seating surface having an enlarged diameter first end adjacent said flow chamber and a reduced diameter second end adjacent said outlet passage, a valve closure member disposed in said flow chamber and including a frusto-conical closure member portion engageable with said seating surface and retained in said body by said seat member, a relatively large diameter cylindrical control piston connected to said closure member and including a portion slidably disposed in a third bore in said body, seal means cooperable with said body and said control piston to prevent leakage of fluid out of said flow chamber through said third bore, actuating means including actuating cylinder means forming a fourth bore and piston means disposed in said fourth bore and engaged with but not secured to said control piston for urging said control piston toward a valve closed position of said closure member, said control piston, said closure member and said body being constructed such that said control piston and said closure member can be removed from said body through said first bore and said second bore by removing said seat member without permitting removal of said piston means from said body through said first bore, said valve being configured such that when said said closure member is fully open the pressure drop between said flow chamber and said outlet occurs in the region between said closure member and said seating surface, said control piston being configured such that a first effective cross-sectional area is exposed to fluid pressure in said flow chamber when said closure member portion is engaged with said seating surface and responsive to said fluid pressure to urge said closure member to move away from said seating surface, said first effective area being equal to the area

of said control piston less the area of said first end of said seating surface, said closure member portion engageable with said seating suface being configured such that a second effective cross-sectional area of said control piston is exposed to fluid pressure in said flow chamber upon movement of said closure member to the valve open position, said second effective area being equal to the area of said control piston less the area of said second end of said seating surface, and the difference between said first and second effective cross-sectional areas is such as to provide a variation between valve opening pressure and valve operating pressure in said flow chamber of no more than five to ten percent of said valve opening pressure.

4,620,563

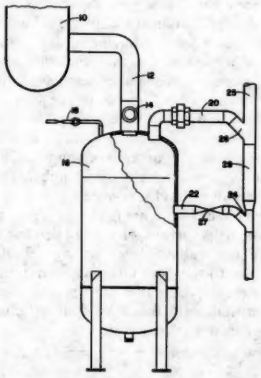
BLOWDOWN POT FOR A REACTOR

John A. Meidl, and Thomas J. Vollstedt, both of Schofield, Wis., assignors to Zimpro Inc., Rothschild, Wis.

Continuation of Ser. No. 130,361, Mar. 14, 1980, abandoned, which is a continuation-in-part of Ser. No. 6,260, Jan. 23, 1979, abandoned, which is a continuation-in-part of Ser. No. 747,073, Dec. 2, 1976, abandoned, which is a continuation-in-part of Ser. No. 552,046, Feb. 24, 1975, abandoned. This application Jul. 26, 1982, Ser. No. 402,150

Int. Cl.⁴ F16K *24/00*; C10B *39/04*

U.S. Cl. 137—572 **5 Claims**



1. The combination of a high pressure wet oxidation, powdered carbon regeneration reactor, where a slurry including ash is produced as a residue under relatively high pressure and temperature, the reactor having conduit means for conducting said ash residue therefrom under pressure, wherein the pressure difference between the reactor and blowdown pot produces falshing of a portion of the slurry entering the blowdown pot,

a blowdown pot including a generally vertical wall located below said reactor, the ash residue conduit means leading downwardly into said blowdown pot,

a pressure control valve in said conduit means,

means separate from the ash residue conduit means, for supplying liquid to said blowdown pot,

and an overflow vent intermediate the top and bottom of said vertical wall in the blowdown pot for overflow by gravity of comined ash residue, liquid and vapors whereby a liquid level in said blowdown pot is maintained for receiving the residue ash in the form of a slurry which impinges on the liquid, the pressure within the blowdown pot being relatively low as compared with the relatively high pressure in the reactor whereby the slurry and flashed liquid are forced from the reactor under relatively high pressure into the blowdown pot, the impingement of the residue upon the liquid in the blowdown pot preventing damage to the walls of the blowdown pot.

4,620,564

DEVICE FOR REGULATING THE FLOW RATE IN A TUBE

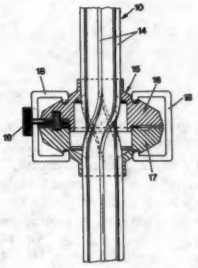
Erik Ekholmer, Danderyd, Sweden, assignor to Mediplast AB, Solna, Sweden

Filed Jan. 18, 1985, Ser. No. 692,492

Claims priority, application Sweden, Jan. 18, 1984, 8400223

Int. Cl.⁴ F16L *55/14*

U.S. Cl. 137—595 **10 Claims**



1. A device for regulating the flow rate in a tube, e.g. in infusion and transfusion assemblies, and which tube at least along a part of its length comprises a plurality of separate parallel flow passages, wherein each flow passage is formed by profile members and a section of a tube wall and a central impermeable core in the tube from which said profile members are attached and extend radially along the length of said central core outwards to the tube wall, a twisting device being arranged on the tube for twisting a portion thereof in order to provide a gradual reduction of the flow area of the tube the tube being twisted about said core, which reduces the compression of the tube.

4,620,565

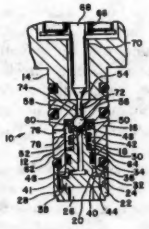
INTEGRATED THREE WAY AND ISOLATION SOLENOID VALVE

G. Emerson Brown, Niles, Mich., assignor to Allied Corporation, Morristown, N.J.

Filed Sep. 3, 1985, Ser. No. 771,550

Int. Cl.⁴ F15B *13/044*

U.S. Cl. 137—596.17 **14 Claims**



1. For use in an anti-lock braking system which includes a source of pressurized braking fluid, a wheel cylinder, and an anti-lock control means for generating brake control signals in response to behavior of the wheel, a control valve comprising: a valve body having a bore and inlet, outlet, and decay ports therein, a first valve element reciprocably received in said bore

and having a fluid passage therethrough communicating between said inlet and outlet ports, a second valve element normally closing said decay port and operable to an open position and further to close said fluid passage and thereby cause a fluid pressure differential across said first valve element, said first valve element being movable in response to said fluid pressure differential to a second position closing said inlet port, and actuator means for moving said second valve element from said closed to said open position in response to said control signals.

4,620,566

DEVICE FOR PROTECTING A CONTAINER CONTAINING A PRESSURIZED FLUID

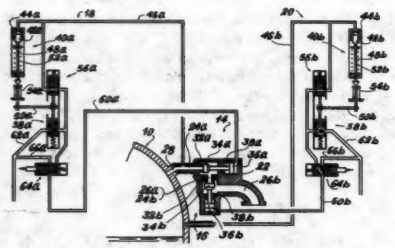
Alain Géry, Saint Avertin; Hubert Chantot, Paris, and Francois Gemignani, Martigues, all of France, assignors to Electricite de France (S.N.), Paris and Societe d'Exploitation de Brevets pour l'Industrie et la Marine, Les Martigues, both of, France

Filed Nov. 30, 1982, Ser. No. 445,517

Claims priority, application France, Dec. 3, 1981, 81 22662

Int. Cl.⁴ E03B *65/72*

U.S. Cl. 137—613 **1 Claim**



1. A container having a pressurized fluid normally maintained at a given nominal pressure and means for relieving said pressurized fluid comprising a protection valve having at least one inlet communicating with the container and at least one outlet, a valve seat placed between said inlet and outlet and a flap sensitive to a counterpressure and normally tightly bearing against said seat, said device also comprising first means which are sensitive to the pressure prevailing in the container for releasing the counterpressure when said pressure exceeds a first predetermined opening threshold above said nominal pressure, said first means applying said counterpressure on said flap of said protection valve when the pressure prevailing in the container decreases below a first closure threshold higher than said nominal pressure, wherein the outlet of said protection valve communicates with the inlet of an isolating valve similar to said protection valve, second means sensitive to the prevailing pressure in the container being provided for releasing the counterpressure applied to the flap of said isolating valve, when said pressure exceeds a second predetermined opening threshold, which is lower than the first closure threshold and slightly higher than said nominal pressure, said second means applying said counterpressure on the flap of said isolating valve when the pressure prevailing in the container decreases below a second closure threshold lower than said nominal pressure.

4,620,567

SOLENOID-OPERATED VALVE

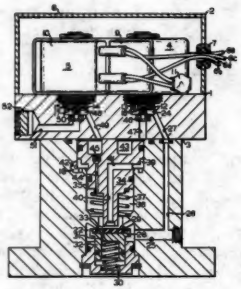
Ronald C. Kurtz, Irwin, Pa., assignor to American Standard Inc., Wilmerding, Pa.

Continuation of Ser. No. 527,046, Aug. 29, 1983, abandoned.

This application Jul. 15, 1985, Ser. No. 758,698

Int. Cl.⁴ F16K *11/04*

U.S. Cl. 137—627.5 **9 Claims**



1. A magnet valve for selectively establishing communication between a supply port and a delivery port and between an exhaust port and the delivery port comprising, a magnet portion having an application solenoid valve and a release solenoid valve, a valve portion having a pilot piston, an exhaust seat and a supply valve, a supply chamber connected to the supply port, a delivery chamber connected to the delivery port, a pilot chamber connectable to the supply port through the release solenoid valve to cause movement of the pilot piston wherein the exhaust seat is initially closed and the supply valve subsequently opens communication between the supply chamber and the delivery chamber, feedback means formed in the pilot piston for connecting the delivery chamber to the pilot chamber for retaining the pilot piston in the moved position, a manual override for the application solenoid valve for opening a pilot valve for establishing a fluid path from the supply chamber to the pilot chamber, and a manual override for the release solenoid valve for opening a pilot valve for establishing a fluid path from the delivery chamber and the pilot chamber to the exhaust port.

4,620,568

VEHICLE OFF ROAD FUEL USE INDICATOR

Harold A. Sumerford, P.O. Box 173, Milledgeville, Ga. 31061, and Melvin R. Collins, Rte. 2, Box 72, Ellaville, Ga. 31806

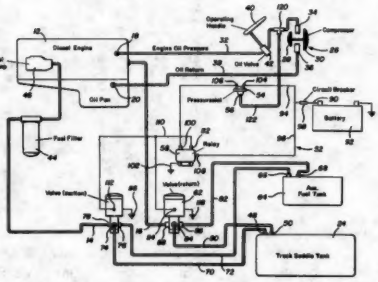
Filed Oct. 9, 1985, Ser. No. 785,753

Int. Cl.⁴ F16K *27/08*

U.S. Cl. 137—899.4 **8 Claims**

1. In combination with a load carrying vehicle equipped with a combustion engine prime mover including a fuel inlet and a fuel return and wherein primary and secondary fuel tanks are provided for supplying fuel to the fuel inlet and the vehicle also includes manually actuatable auxiliary load unloading equipment driven at least indirectly from said prime mover only when said vehicle is stationary and initiation of operation of said auxiliary equipment directly results in a pressure difference in a fluid pressure line, said vehicle including said first and second pairs of fuel supply and fuel return lines extending between said primary and secondary tanks, respectively, and said fuel inlet and fuel outlet; the improvement comprising a pair of separate first and second valve means, said first valve means being connected between said supply lines and said fuel outlet, said second valve means being connected between said return lines and said fuel return, said first and second valve means including normal and actuated modes, said first valve means, when in said normal mode, communicating the supply

line of said first pair of lines with said fuel inlet and blocking communication of the supply line of said second pair of lines with said inlet, said second valve means, when in said normal mode, communicating said fuel return with the return line of said primary fuel tank and blocking communication of said fuel return with the return line of said secondary tank, said first valve means, when in said actuated mode, communicating the supply line of said auxiliary tank with said fuel inlet and blocking communication of the supply line of said primary tank with



said fuel inlet, said second valve means, when in said actuated mode, communicating said fuel return with the return line of said secondary tank and the blocking communication between said fuel return and the fuel return line of said primary tank, said first and second valve means including actuating means therefore for simultaneously actuating said first and second valve means, and control means operative to sense said pressure difference in response to actuation of said auxiliary equipment to actuate said actuating means and to place said first and second valve means in said actuated modes.

4,620,569

FLEXIBLE ARMORED SYNTHETIC RESIN HOSE, MORE SPECIALLY FOR SHOWERS

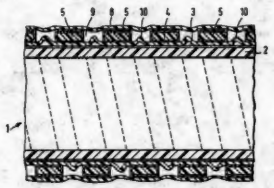
Thassilo A. F. von Glanstätten, Wasserburg/Inn, and Eugen H. Stahl, Böttingen, both of Fed. Rep. of Germany, assignors to Hans Grohe GmbH & Co. KG, Fed. Rep. of Germany

Continuation of Ser. No. 260,675, May 5, 1981, abandoned. This application Jan. 20, 1984, Ser. No. 572,296

Claims priority, application Fed. Rep. of Germany, May 6, 1980, 3017326; May 14, 1980, 3018417

Int. Cl.[4] F16L *11/08*

U.S. Cl. 138—132 **18 Claims**



1. A flexible armored synthetic resin hose for showers and the like, comprising:

an extruded inner hose part of flexible material;

an extruded outer hose part of soft plastic material, the outer hose part being supported in spaced relationship from the inner hose part;

a single reinforcement helix for armoring the hose, said reinforcement helix being placed between said inner hose part and said outer hose part; and,

a helix-like hose of soft plastic material enclosing the reinforcement helix and defining a range of movement for the reinforcement helix therein, said helix-like hose being joined to the inner hose part and to the outer hose part to maintain the spaced relationship, the reinforcement helix being freely slippingly positioned within the helix-like hose, and free to slip relative to the helix-like hose and relative to the inner hose part and to the outer hose part, and wherein a free space is defined between adjacent coils of the reinforcement helix.

4,620,570

METHOD AND APPARATUS FOR DISPOSAL OF WEFT YARN IN A JET LOOM

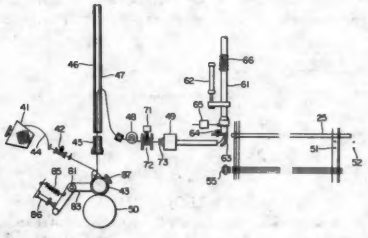
Hajime Suzuki, Anjo, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Continuation of Ser. No. 491,936, May 5, 1983. This application Feb. 27, 1986, Ser. No. 834,154

Claims priority, application Japan, May 11, 1982, 57-77436; Jun. 5, 1982, 57-95614; Jun. 9, 1982, 57-97851; Jun. 9, 1982, 57-97852

Int. Cl.[4] D03D *47/30*

U.S. Cl. 139—435 **13 Claims**



1. A method for disposal of weft yarns in a jet loom in which measured lengths of the weft yarns from a weft yarn supply unit are inserted into a warp shed under the effect of a fluid ejected from a jet nozzle which is maintained at all times in fixed position for inserting yarn into said warp shed, wherein the loom is braked when stop signals for the loom are sensed, and the weft yarn is inhibited from proceeding into said warp shed until the braked loom is halted, at which time the loom operation is reversed to change the opening of said warp shed for correction of the condition which initiated said stop signals, said weft yarn being inhibited from proceeding into the warp shed when said stop signals are sensed by being deflected from its usual route when the yarn is about to enter said shed by guide means actuated by said stop signals and which deflect and guide the weft yarn toward a suction nozzle having a suction opening facing in the direction of the route of the weft yarn during normal operation, to be sucked away from the warp shed by said suction nozzle, whereupon said sucked yarn is cut at a location along its deflected route between said suction nozzle and said jet nozzle.

4,620,571

SKEINING APPARATUS

Geoffrey E. Whellams, Teeside Airport, Great Britain, assignor to Fisher-Baker Corporation, Jensen Beach, Fla.

Filed Jul. 24, 1984, Ser. No. 633,845

Int. Cl.[4] B65H *54/56*

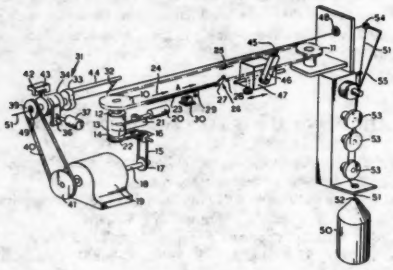
U.S. Cl. 140—102 **28 Claims**

1. A skeining apparatus comprising, in combination: a pair of spaced apart filament guides arranged beyond opposite ends of a skein to be formed;

a pair of spaced apart looping needles arranged between the guides with one needle being revolvable to twist filament strands looped over the needles into a skein;

an endless drive member carrying a looping element with

the drive member constrained to follow a path such that the locus of the element encircles both needles and with the needles intersecting a plane defined by the locus of the looping element; and



means for propelling the drive member and the revolvable needle and operable to stop each of them with the looping element and revolvable needle in predetermined positions.

4,620,572

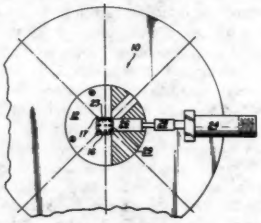
RADIAL REFORM HEAD

David E. Baker, Manassas; Howard L. Kelly, Warrenton, and Keith W. Merands, Manassas, all of Va., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 14, 1985, Ser. No. 745,452

Int. Cl.[4] B21F *45/00*

U.S. Cl. 140—105 **6 Claims**



1. A reform head for reforming the shape of the perimeter pins of a semiconductor module, comprising:

an annular plate have portions defining a rectangular aperture of predetermined edge dimensions,

means for inserting and aligning the perimeter pins of a semiconductor module into said aperture,

a plurality of movable jaws oriented radially around the center of said aperture at 45 degree intervals, each jaw comprising a base portion movable below said plate, and an extended portion containing grooves aligned with to be reformed perimeter pins movable within said aperture,

means for moving said movable jaws radially to and from said pins,

the extended portion of said jaws being moved against said perimeter pins, forcing said pins against the edges which define said aperture of said plate to reform the pins to a particular dimension.

4,620,573

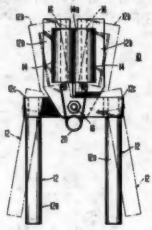
TWISTED PAIR WIRE SEPARATOR

Gregg T. Meder, Downingtown, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Apr. 1, 1985, Ser. No. 718,480

Int. Cl.[4] B21F *15/02*

U.S. Cl. 140—123 **4 Claims**



1. A twisted pair wire separator comprising:

a pair of members arranged in pliers-like fashion, each of said member including a handle section at one extremity thereof, a U-shaped section at the opposite extremity thereof, and a crosspiece intermediate said last mentioned sections,

the principal longitudinal axes of said handle section and said U-shaped section being oriented parallel to each other, said crosspiece of each of said members being disposed transversed to said longitudinal axes and coupling the last mentioned sections to each other in spaced-apart relation,

means disposed in common in the respective crosspieces of said pair of members for pivotably linking said members to each other, the U-shaped sections of the respective members being oriented in opposition to each other,

a pair of right circular cylindrical tubular jaws rotatably mounted in respective ones of said U-shaped sections, whereupon the movement of the handle sections of said members toward each other tends to cause said tubular jaws to contact each other along their longitudinal axes, and

whereby a rolling pressure exerted upon at least one twisted wire pair disposed between said tubular jaws and being drawn therethrough effects a separation of the wires in said pair.

4,620,574

HAND SQUEEZE TERMINAL WIRE CONNECTING TOOL

Paul R. Kilmer, Leroy, Mich., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Jan. 17, 1985, Ser. No. 692,112

Int. Cl.[4] B21F *3/00*

U.S. Cl. 140—124 **12 Claims**

1. A manually actuated terminal wire connecting apparatus, comprising:

a frame;

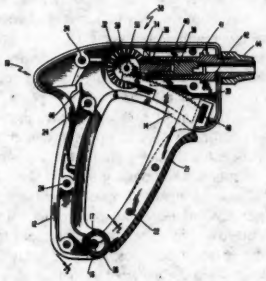
a rotatable drive assembly disposed on said frame, said drive assembly having a spur gear;

a cam disposed on said frame, said cam having a central axis and a first axis parallel and eccentric to said central axis, said cam being rotatable about said first axis;

a hand actuated lever pivotally mounted on said cam to rotate about said cam central axis, said lever having a gear rack formed at one end remote from said cam, said gear rack for engaging said spur gear;

adjusting means associated with said cam for selectively rotating said cam about said first axis, the rotating of said cam changing the relative distance between said central cam axis and said drive assembly spur gear to alter the

degree of engagement between said bear rack and said spur gear; and



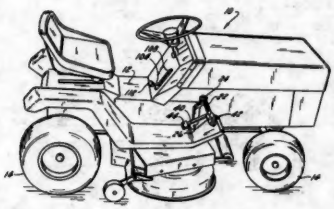
means associated with said frame for frictionally holding said cam in a fixed position relative to said frame and said spur gear.

4,620,575

SPEED CONTROL FOR LAWN AND GARDEN VEHICLE

Ronald R. Cuba, Plymouth; Richard C. Heidner, West Bend; Clyde R. Wetor, Cascade, and Bruce H. Fiedler, Plymouth, all of Wis., assignors to Gilson Brothers, Plymouth, Wis.

Filed Feb. 11, 1985, Ser. No. 700,472
Int. Cl.[4] B60K *17/00*
U.S. Cl. 180—307 37 Claims



36. A speed and direction control arrangement for a lawn and garden vehicle including an engine and transmission operably connected to the engine, the control arrangement comprising:

means for controlling the transmission, said means for controlling the transmission travel including a manually operable speed control adapted to be moved to control the speed of the lawn and garden vehicle, and a speed control member responsive to movement of said manually operable speed control,

means for selectively manually maintaining the travel speed of the vehicle at a selected minimum speed, said means for selectively manually maintaining the travel speed of the vehicle at a selected minimum speed including means for providing for movement of said manually operable speed control to an increased speed position and means for holding said speed control member in said selected minimum speed position when said manually operable speed control is released from said increased speed position, and

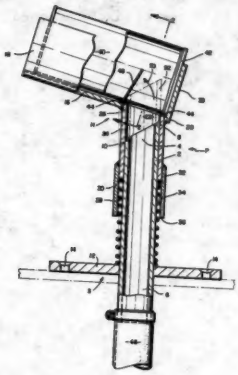
brake means for selectively braking said vehicle, said brake means being operably connected to said means for holding said speed control member in said selected minimum speed position to cause disengagement of said means for holding said speed control member in said selected minimum speed position when said brake is applied.

4,620,576

METHOD AND APPARATUS FOR PIERCING A CONTAINER

Lorenzo H. Owen, Jr., Marietta, Ga., assignor to David R. Owen, Dallas, Ga.

Filed Dec. 11, 1984, Ser. No. 680,364
Int. Cl.[4] B65B *3/04*
U.S. Cl. 141—1 8 Claims



1. The method for draining fluid from a container by piercing the bottom of the container comprising the steps of;

a. positioning said container in a substantially vertically movable container holder so that the container is inclined in the container holder with the top of the container substantially elevated with respect to the bottom of the container;

b. positioning the container in the container holder so that the bottom of the container is in close proximity to a piercing member;

c. providing a piercing member having drainage means therein and having a front piercing edge and having a beveled piercing edge with the bevel extending in an inclined fashion so that the top piercing edge of the bevel upon piercing the container engages the rearmost portion of the bottom of the container;

d. applying a downward motion to the container and the container holder whereby to force said piercing member into said container and simultaneously cause a tear to be struck from the container in a direction from the bottom of the container towards the top of the container;

e. withdrawing the piercing member substantially from the container; and,

f. drawing the material from the container through the piercing member and into a storage receptacle;

g. and removing said container from said container holder and replacing and repeating the process with a new container.

4,620,577

ENCLOSED MATERIAL SHUTTLE SYSTEM

Erik T. Nordenswan, Pargas, Finland, assignor to Oy Partek AB, Finland

PCT No. PCT/FI82/00032, § 371 Date Apr. 25, 1984, § 102(e) Date Apr. 25, 1984, PCT Pub. No. WO84/00945, PCT Pub. Date Mar. 15, 1984
PCT Filed Aug. 25, 1982, Ser. No. 606,437
Int. Cl.[4] B65B *1/04, 3/04*
U.S. Cl. 141—98 14 Claims

1. A shuttle system comprising:

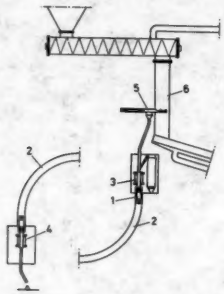
elongate, sleeve-shaped mantle means having a hollow interior and first and second openings communicating with

said interior at first and second opposing ends, respectively, of said mantle means;

a first closing member mounted on said mantle means to open toward said interior and being resiliently biased to close said first opening;

a second closing member mounted on said mantle means to open toward said interior and being resiliently biased to close said second opening;

stationary filling means having first grip means for holding said mantle means, said first grip means including a first pair of arm levers pivotally attached to said filling means,



each of said arm levers having a hook-shaped arm positioned to engage said first end, and a second arm;

first means mounted on said filling means for sliding toward and away from said second arms of said first pair of arm levers;

first resilient means for urging said sliding means toward said second arms of said first pair of arm levers to engage said second arms thereof and pivot said hook-shaped arms thereof toward each other; and

first means for opening said first closing member and depositing material in said interior.

4,620,578

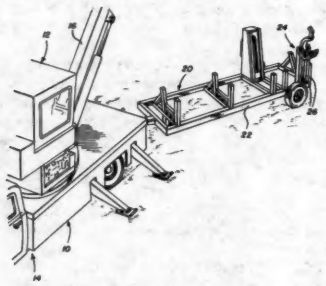
TREE DELIMBER

Dale R. Verrill, Richville Rd., Oxford, Me. 04270, and Samuel D. Sessions, Highland Ave., Norway, Me. 04268

Filed Aug. 9, 1985, Ser. No. 764,062

Int. Cl.[4] A01G *23/08*; B27L *1/00*

U.S. Cl. 144—2 Z **8 Claims**



1. A tree delimber including a base, upwardly opening generally semi-cylindrical lower jaw means, support means mounting said lower jaw means in elevated position relative to and from said base, said lower jaw means including a pair of upwardly opening and axially spaced generally semicylindrical lower jaw members defining remote oppositely facing generally semi-cylindrical limb stripping edges, an inverted generally semi-cylindrical and downwardly opening upper jaw member, mounting means pivotally mounting one arc end portion of said upper jaw member between one pair of corresponding arc ends of said lower jaw members for swinging of said upper jaw member between a closed position with the other arc end portion of said upper jaw member gravity swung to a position spaced below the other pair of corresponding arc ends of said lower jaw members and an open position with said other arc end portion of said upper jaw member swung upwardly to a position with said upper jaw member disposed to one side of a vertical plane containing the center axis of said lower jaw members and opening toward the other side of said plane, and abutment means carried by said one arc end portion of said upper jaw member and projecting into the open area bound by said lower jaw members when said upper jaw member is in the raised open position and engageable by a log laterally downwardly displaced into the area bound by said lower jaw members to swing said upper jaw from said open position toward said closed position.

4,620,579

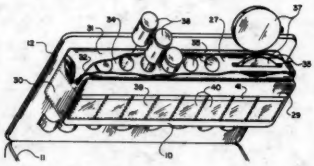
ACCESSORY RECEPTACLE

Greg E. Lowe, Boulder, and Harold A. Jordan, Longmont, both of Colo., assignors to Lowe Alpine Systems, Inc., Lafayette, Colo.

Filed Nov. 28, 1984, Ser. No. 675,544

Int. Cl.[4] B65D *11/00*

U.S. Cl. 150—52 J **5 Claims**



1. Attached to an equipment bag, an accessories organizer comprising:

a cushioning structure formed from a one-piece readily yieldable and resilient solid material having a plurality of spaced cavities defined therein, said cavities adapted to receive different ones of a plurality of said accessories;

first enclosure means including wall means defining at least a first closable compartment therein, said first compartment adapted to receive said structure, said structure substantially occupying all of the interior space of said first closable compartment defined by said wall means; and

a plurality of pockets attached to said first enclosure means, said pockets having at least one transparent portion, and at least some ones of which pockets are in proximity to different ones of said cavities, each of said pockets being accessible from at least one direction;

wherein said accessories are snugly received and retained within said cavities for protection thereat, and identifying materials received by said pockets are visible through said transparent portion thereby identifying the contents of said different ones of said cavities in proximity to said some ones of said pockets without removal of either said accessories or said identifying materials from said organizer.

4,620,580

TIRE COOLING BY FLUID TRANSFER ELEMENT

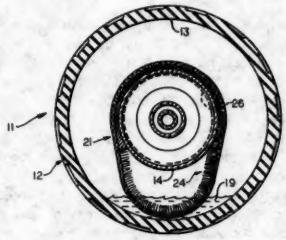
John J. Groezinger, Dunlap, and Gene A. Anders, Peoria, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

PCT No. PCT/US83/00128, § 371 Date Jan. 26, 1983, § 102(e) Date Jan. 26, 1983, PCT Pub. No. WO84/02885, PCT Pub. Date Aug. 2, 1984

PCT Filed Jan. 26, 1983, Ser. No. 474,656

Int. Cl.[4] B60C *23/19*

U.S. Cl. 152—153 4 Claims



1. In a vehicle wheel (11) having a rotatable rim (14), a tire (12) mounted on the rim (14), said tire and rim defining an inflation chamber (13), and a volume of liquid coolant (19) located in the inflation chamber (13), the improvement comprising:

a flexible fluid transfer belt (21) produced from a strip of material (21) formed of a porous flexible fabric and operable to carry fluid solely in response to rotation of said wheel from said volume of liquid coolant to said rim, said fluid transfer belt (21) being drivingly connected to said rim (14) by frictional engagement and is free to move thru said volume of liquid coolant (19) relative to the inside surface of the tire.

4,620,581

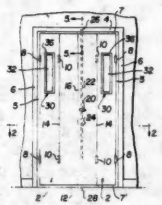
INSULATION AND SECURITY SHUTTER

Howard K. Wallace, Rte. 2, Box 69B, Melrose, Fla. 32666

Filed Sep. 21, 1983, Ser. No. 534,420

Int. Cl.[4] E06B *9/02;* E05D *3/02, 15/26*

U.S. Cl. 160—187 1 Claim



1. An insulated shutter assembly comprised of (1) a frame having upper and lower horizontal frame members of substantially equal length and having apertures therein, said upper and lower horizontal frame members being interconnected by two vertical frame members of substantially equal length and (2) two tightly-fitting insulation-filled bifold doors supported within said frame wherein each bifold door is comprised of:

a. two insulation-filled panels one of which is an exterior panel which is hinged to one of the vertical frame members and the other of which is an interior panel, said insulation filled panels having vertical edges normal to the horizontal frame members when the shutter is closed, the vertical edges of said panels having both a tongue and a groove along the length thereof, the tongue of each panel's vertical edge that is adjacent the other panel interfitting with the groove of the adjacent panel's vertical edge when the bifold door is closed to form a double tongue and groove airtight closure;

b. double-leaf hinges connecting the adjacent panels to each other, one leaf of each panel-connecting hinge extending into and being recessed in the groove of the vertical edge of one panel and not extending into the tongue thereof, and the other leaf of said panel-connecting hinge extending into and being recessed in the tongue of the vertical edge of the other adjacent panel and not extending into the groove thereof whereby two tongue and groove channels are formed by the interface of the adjacent vertical edges of the panels when the bifold doors are closed, one of said channels being uninterrupted and airtight and the other channel being interrupted only at the loci where the hinges are located;

said insulation-filled bifold doors, when the shutter is closed, contacting each other along interior vertical panel edges of their respective interior panels; the tongue of each panel's interior vertical edge being in contact with the groove of the other panel's interior vertical edge and interfitting therewith to form a double tongue and groove airtight closure comprised of two uninterrupted tongue and groove channels formed by the interface of the adjacent interior vertical edges;

said insulation-filled bifold doors being supported within said frame by double-leaf hinges connecting each of the two exterior panels to a different one of the two vertical frame members, said vertical frame members each having an interior vertical edge running the length of the portion thereof within the opening formed by the vertical and upper and lower horizontal frame members, said interior vertical edge comprising a tongue and a groove, which tongue and groove interfits with the tongue and groove of the exterior vertical edge of the exterior panel of the bifold door connected to the vertical frame member to form two tongue and groove channels; said leaves of the double-leaf hinges connecting said panels to the vertical frame members extending into one tongue and groove channel and not the other, whereby one of the tongue and groove channels formed by the exposed tongue and groove of the interior vertical edge of the vertical member and the tongue and groove of the exterior vertical edge of the exterior panel is uninterrupted and airtight and the other of the tongue and groove channels formed by the exposed tongue and groove of the interior vertical edge of the vertical member and the tongue and groove of the exterior vertical edge of the exterior panel is interrupted only at the loci where the hinges are located; and

each of said bifold doors having a means of locking same in a closed position comprising two elongated rod-like members receptive at one extreme for penetration into said apertures in said upper and lower horizontal frame members and connecting at the other extreme to movement means, wherein when said movement means is actuated in one direction the rod-like members concomitantly retreat from said apertures in said elongated top and bottom frame members and when said movement means is actuated in the opposite direction, said rod-like members concomitantly penetrate said apertures in said elongated top and bottom horizontal frame members.

4,620,582

PROCESS FOR PRODUCING A CASTING MOULD AND CAST MEMBERS

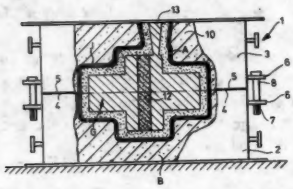
Gerhard Müller-Späth, Heuslingstr. 19a, Freudenberg-Oberfischbach, Fed. Rep. of Germany

Filed Jun. 25, 1984, Ser. No. 624,017

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1983, 3323697

Int. Cl.[4] B22C 9/00

U.S. Cl. 164—5 4 Claims



1. A process for producing a sand casting mold comprising providing an empty mold box having a top and a bottom, completely filling said top and said bottom with a single homogeneous chemically bound molding material about a pattern so as to form shaping surfaces in the molding material in said top and bottom of said mold box, removing said pattern from said top and bottom, locating said top of said mold box on said bottom of said mold box such that said shaping surfaces define a mold cavity, feeding molten metal into said mold cavity wherein only molding material in the region of said molten metal becomes pourable due to break down of the binder from the heat of the casting, removing said cast metal and pourable molding material from said mold cavity so as to form an enlarged cavity, locating a pattern in said enlarged cavity so as to define a space between the remaining mold material and said pattern and filling said space with said molding material so as to define a further mold cavity.

4,620,583

LOOP TYPE CONTINUOUS METAL CASTING MACHINE

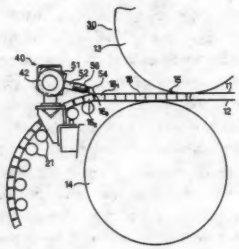
Masakazu Koide; Takashi Okazaki, both of Ibaragi, and Takashi Asari, Osaka, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka and Sumitomo Heavy Industries, Ltd., Tokyo, both of, Japan

Filed Feb. 27, 1985, Ser. No. 706,321

Claims priority, application Japan, Feb. 28, 1984, 59-36917; Oct. 31, 1984, 59-230691

Int. Cl.[4] B22D 11/16, 11/06

U.S. Cl. 164—154 17 Claims



1. A loop type continuous metal casting machine comprising:

upper and lower endless revolving casting belts;

two side dams each including a multiplicity of metal damblocks and revolved in a loop, which passes along a casting zone from the entrance end thereof, between said revolving casting belts by the lower one of said revolving casting belts to define a downhill moving mold between said two side dams, said loop returnig from the exit end to the entrance end of said casting zone along a path located away from said casting zone; and

two flexible metal strap loops stringing said side dams therethrough, respectively, to form a pair of side dam loops each having said metal damblocks abutting in end-to-end relationship against one another but allowed to slide on and relative to the corresponding one of said metal strap loops,

wherein the improvement comprises push means, said push means including a push head having a wedge-shaped snout, and actuating means for reciprocating the push head back and forth so that the push head enters periodically a wedge-shaped gap, which is formed between the adjacent two of the metal damblocks of said corresponding side dam loop before entry into said casting zone, to push the preceding one of said adjacent two forward thereby to tightly press the preceding one of said metal damblocks together so that the end-to-end abutting relationships of said metal damblocks may be ensured while said side dam loops are passing through said casting zone, whereby the molten metal can be continuously cast in said moving mold without burrs.

4,620,584

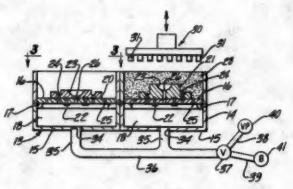
GREEN SAND MOLD FILLING SYSTEM

Raymond H. Witt, 28240 Grand River, Farmington, Mich. 48024

Filed May 24, 1985, Ser. No. 737,459

Int. Cl.[4] B22C 15/28

U.S. Cl. 164—160.1 1 Claim



1. A mold densification system for sand casting cavity molds, comprising:

first and second interconnected open top substantially box-like support stools arranged side by side, each support stool having a continuous interior support ledge below said top and a floor positioned a spaced distance below said ledge; first and second generally flat pattern support plates each having an upper face upon which a pattern is secured and a lower face resting on its outer perimeter upon the ledge of said respective stools adjacent said top to form an air chamber between the plate and floor;

air passageway holes extending through the plate at preselected locations;

and air passageway holes registering with at least some of the plate holes and formed through the patterns at preselected locations, corresponding to places in the mold, which are normally difficult to fill with poured sand and difficult to densify such sand;

an open top and bottom box-like flask section arranged to fit over each plate for surrounding each pattern;

means for pouring sand into each flask section for filling,

mechanical means for compacting the sand poured into each flask section;

a single pump means connected to both air chambers for simultaneously applying a vacuum to each air chamber during the pouring of the sand and the compacting of the sand within each flask section, to thereby simultaneously

produce a vacuum in each of the air passageway holes for assisting in filling and densifying the sand filling within each flask section and around the pattern in the preselected locations during the time the sand is poured and compacted;

a single blower means connected to both air chambers for simultaneously providing pressurized air in each air chamber, at the conclusion of the compacting of the sand, for producing a pressurized flow through the air passageway holes for assisting in separating, and in maintaining the integrity and accuracy of the sand cavity surfaces at said preselected locations while the compacted sand filled flask sections are removed away from the plates and patterns to provide the casting cavities.

4,620,585

APPARATUS FOR THE COMPACTION OF FOUNDRY MOLD MATERIAL

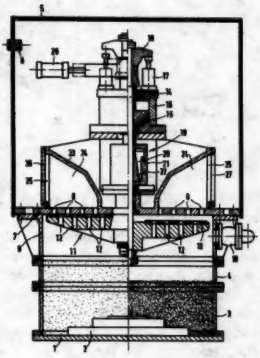
Günter Müller, Karlsruhe; Norbert Damm, Karlsdorf-Neuthard, and Günter Kuppinger, Karlsruhe, all of Fed. Rep. of Germany, assignors to BMD Badische Maschinenfabrik Durlach GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Jun. 6, 1984, Ser. No. 617,920

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1983, 3321622

Int. Cl.[4] B22C *15/00*

U.S. Cl. 164—169 **11 Claims**



1. An apparatus for a compaction of foundry mold making material using gas under pressure, the apparatus comprising a pressure vessel for the gas and forming a gas inlet chamber, a mold flask, a filling frame, a pattern plate and a pattern thereon onto which said material is loosely heaped, said flask, said frame and said plate forming a mold chamber placed under said pressure vessel, a valve interposed between said pressure vessel and said mold chamber, said valve having a movable valve member adapted to open up the flow cross section of said valve predominantly under an effect of gas under pressure in said pressure vessel, means for guiding said valve member within said pressure vessel, said valve member being adapted to perform an opening motion which is at least mainly directed into said mold chamber, said guiding means includes a middle guide rod for guiding said valve member and moving the same out of the open position into the closed position, and wherein a clamping means is provided for fixing said rod in the closed position of the valve member.

7. An apparatus for a compaction of foundry mold making material using gas under pressure, comprising a pressure vessel for the gas and forming a gas inlet chamber, a mold flask, a filling frame, a pattern plate and a pattern thereon onto which said material is loosely heaped, said flask, said frame and said plate forming a mold chamber disposed under said pressure vessel, a valve interposed between said pressure vessel and said mold chamber, said valve having a movable valve member adapted to open up a flow cross section of said valve predominantly under an effect of gas under pressure in said pressure vessel, means for guiding said valve member within said pressure vessel, said valve member being adapted to perform an opening motion which is at least mainly directed into said mold chamber, means defining an opening forming a communication between said pressure vessel and said mold chamber, said movable valve member being formed as a thin valve diaphragm made of a flexible material adapted to cover an opening between the pressure vessel and the mold chamber, means for locking the thin valve diaphragm at an edge thereof in a closed position of said valve so that on release of said locking means said valve diaphragm may be forced downwards and towards a middle of the valve diaphragm into said mold chamber by an action of said gas under pressure.

4,620,586

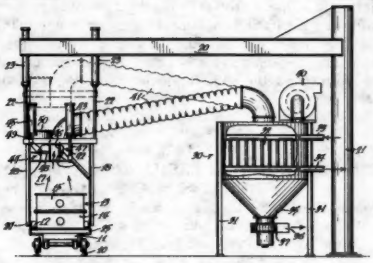
METHOD AND APPARATUS FOR RECLAIMING FOUNDRY SAND

Albert Musschoot, Barrington, Ill., assignor to General Kinematics, Barrington, Ill.

Continuation of Ser. No. 918,515, Jun. 23, 1978, abandoned, which is a continuation-in-part of Ser. No. 780,670, Mar. 23, 1977, abandoned, which is a continuation-in-part of Ser. No. 761,414, Jan. 21, 1977, abandoned. This application May 28, 1985, Ser. No. 738,884

Int. Cl.[4] B22C *5/08*

U.S. Cl. 164—253 **6 Claims**



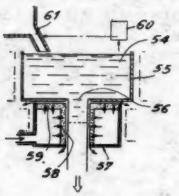
1. Apparatus for reclaiming moist foundry sand in a mold flask after molten metal has been poured at a pouring station into a cavity in the sand comprising means forming a condensing chamber, vacuum generating means operatively associated with said chamber for maintaining the condensing chamber at a pressure of about 1 psi absolute, a wheeled carrier having a support floor for supporting the mold flask, an open bottom vacuum chamber, means adjacent said carrier and connected to said vacuum chamber for lowering the vacuum chamber over the carrier, sealing means for effecting a seal between the vacuum chamber and the support floor to close the bottom of the vacuum chamber, a conduit interconnecting the vacuum and condensing chambers, a valve controlling the conduit, means for operating the valve to expose the mold flask in the vacuum chamber to the reduced pressure in the condensing chamber to cause the moisture in the sand to evaporate into vapor and be drawn through the conduit into the condensing chamber, condensing means in the condensing chamber to condense said vapor, means for sequentially operating said valve to isolate the vacuum chamber from the condensing chamber and for restoring the vacuum chamber to atmospheric pressure, and means for raising the vacuum chamber away from the carrier.

4,620,587

PROCESS FOR THE TREATMENT OF A LIQUID MASS

Claude Potard, Saint Egreve, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Division of Ser. No. 396,358, Jul. 8, 1982, Pat. No. 4,546,811.
This application Aug. 2, 1985, Ser. No. 761,855
Claims priority, application France, Jul. 17, 1981, 81 13966
The portion of the term of this patent subsequent to Oct. 15, 2002, has been disclaimed.
Int. Cl.[4] B22D *11/00*
U.S. Cl. 164—475 3 Claims



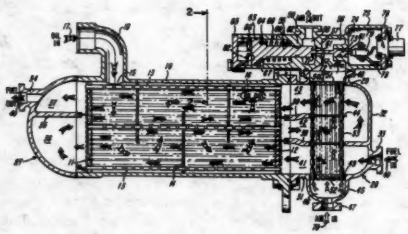
1. A process for producing a solid member from a molten mass by continuous casting comprising the steps of providing a container having a discharge opening in its bottom for receiving said molten mass and a gas-permeable sleeve communicating with said discharge opening and disposed therebelow, said sleeve being open at the bottom thereof and made from a gas-permeable porous fritted material or perforated with narrow ducts, causing a pressurized gas to pass from the outside of said sleeve to the inner walls thereof while causing said molten mass to flow therethrough, whereby a pressurized gaseous film is formed separating said mass from the inner walls of said sleeve while a solid-liquid interface is formed therein, and regulating the temperature of said pressurized gas to control the position of the solid-liquid interface formed within said sleeve.

4,620,588

THREE FLUID HEAT EXCHANGER WITH PRESSURE RESPONSIVE CONTROL

Robert R. Pfouts, Dayton; John E. Wunder, Kettering, and William Nostadt, Jr., Vandalia, all of Ohio, assignors to United Aircraft Products, Inc., Dayton, Ohio

Filed Nov. 29, 1984, Ser. No. 676,500
Int. Cl.[4] G05D *23/00*; F28F *27/02*
U.S. Cl. 165—32 5 Claims



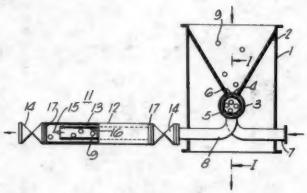
1. A three fluid heat exchanger, including a shell providing an inlet and an outlet for a first fluid, subject to a changing condition, said first fluid flowing under pressure and being subject to a drop in pressure reflected in a decreased flow through said shell, core means in said shell for conducting a second fluid lengthwise thereof in a segregated heat transfer relation to said first fluid, flow of said second fluid being continuous, manifold means acting as an extension of said shell and forming part of a flow passage for said second fluid, other core means installed in said manifold for conducting a third fluid through said manifold means in a segregated heat transfer relation to said second fluid therein, said other core means being in said flow passage for said second fluid and being traversed thereby to place said second and third fluids in heat transfer relation therein, and means responding to a changing pressure of said first fluid for opening and closing said other core means to flow of said third fluid therethrough, said means opening said other core means to flow of said third fluid therethrough in response to a predetermined drop in pressure of said first fluid, heat transfer effects being continuously available in said other core means by reason of continuous flow of said second fluid but being realized only upon the opening of said other core means to flow of said third fluid therethrough.

4,620,589

DEVICE FOR CLEANING THE PIPES OF PIPE HEAT-EXCHANGERS

Josef Koller, Ziegeleiweg 26, 4006 Erkrath, Fed. Rep. of Germany

Filed Jan. 29, 1985, Ser. No. 695,972
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1984, 3403198
Int. Cl.[4] F28G *1/12*
U.S. Cl. 165—95 7 Claims



1. In a device for cleaning the pipes of heat exchangers with cleaning bodies having means for removing and locking the cleaning bodies from the pipes, comprising at least one screen mounted in a casing and which ends downstream in a pipe having an opening, another member having an opening and rotationally mounted to the pipe, and a cleaning body exit line communicating with the pipe, the improvement wherein: the removing and locking means further comprises a lock connected to the cleaning body output line and comprising an outer pipe and an inner screen pipe, each fabricated from a piece of corresponding pipe material, shut-off devices, provided at the input and at the output end of the lock, trap means positioned at the output of the outer pipe and comprising a hinged flap and wherein the connection between the outer pipe and the shut-off device is releasable.

4,620,590

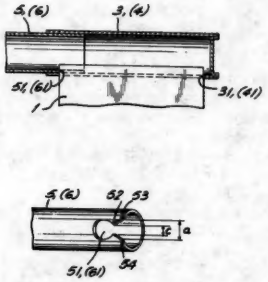
ALUMINUM HEAT EXCHANGER

Mikio Koisuka, and Hisao Aoki, both of Gunma, Japan, assignors to Sanden Corporation, Gunma, Japan

Filed Dec. 5, 1984, Ser. No. 678,400
Int. Cl.[4] F28F *1/00*
U.S. Cl. 165—150 5 Claims

1. In a heat exchanger comprising a flat metal tube for conducting fluid having opposite first and second ends, a plurality of metal fins fixed onto outer surfaces of said flat metal tube, first and second header pipes fixedly mounted on said opposite ends of said flat metal tube, respectively, so that said flat metal tube communicates with the interior of said header pipes, each of said header pipes having a first end that is open and a second end that is closed, an inlet tube connected to said first end of said first header pipe, and an outlet tube connected to said first end of said second header pipe, the improvement which comprises one of said inlet and outlet tubes having an end portion inserted into said first end of the corresponding interconnected

header pipe, said end portion having a cut-away portion in the form of a first axial slit extending axially inwardly from an open end at the adjacent end of said one tube, said first axial slit having an axial intermediate portion slightly smaller than the



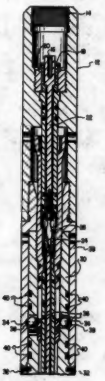
thickness of said flat metal tube, and a tapered portion diverging towards said open end of said first axial slit, and said first end of said flat metal tube extending into said corresponding interconnected header pipe and being closely fitted into said first axial slit.

4,620,591

CHEMICAL CUTTING APPARATUS HAVING SELECTIVE PRESSURE BLEED-OFF

Jamie B. Terrell, and Donna K. Pratt, both of Fort Worth, Tex., assignors to Gearhart Industries, Inc., Fort Worth, Tex.

Filed Apr. 12, 1985, Ser. No. 722,506
Int. Cl.[4] E21B *29/02*
U.S. Cl. 166—63 **15 Claims**



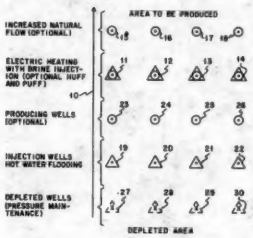
1. An apparatus for cutting inside a well bore comprising:
a tubular casing adapted to be inserted into a well bore;
a longitudinal passage disposed within said tubular casing;
a chamber disposed within said tubular casing for containing a chemical cutting fluid;
a closure member disposed between said chamber and said longitudinal passage, said closure member adapted to open in response to fluid pressure within said chamber;
means for generating fluid pressure within said chamber;
discharge passage means coupled to said longitudinal passage for coupling said chemical cutting fluid into said well bore; and
means for selectively releasing fluid pressure from within said longitudinal passage.

4,620,592

PROGRESSIVE SEQUENCE FOR VISCOUS OIL RECOVERY

Thomas K. Perkins, Dallas, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jun. 11, 1984, Ser. No. 619,470
Int. Cl.[4] E21B *43/24, 43/30*
U.S. Cl. 166—245 **15 Claims**


AREA TO BE PRODUCED
INCREASED NATURAL FLOW (OPTIONAL)
ELECTRIC HEATING WITH BRINE INJECTION (OPTIONAL HUFF AND PUFF)
PRODUCING WELLS (OPTIONAL)
INJECTION WELLS HOT WATER FLOODING
DEPLETED WELLS (PRESSURE MAINTENANCE)
DEPLETED AREA

1. A progressive method of producing oil from a portion of a subsurface formation containing viscous oil selected to be progressively produced comprising:
a. injecting brine at a first rate of injection into said selected portion of said formation through a plurality of first wells while applying electrical voltage through said plurality of first wells in a manner such that electric current flows through a part of said selected portion of said formation adjacent said plurality of first wells, said current being sufficient to increase the temperature of said part of said selected portion of said formation;
b. injecting brine at a second rate of injection into said selected portion of said formation through a plurality of second wells while applying electrical voltage through said plurality of second wells at a predetermined time after commencement of injection of brine and applying electrical voltage through said plurality of first wells in a manner such that electric current flows through a part of said selected portion of said formation adjacent said plurality of second wells, said current being sufficient to increase the temperature of said part of said selected portion of said formation, said plurality of second wells being spaced from said plurality of first wells in a first direction selected to progressively traverse said selected portion of said formation;
c. discontinuing step "a" in said plurality of first wells;
d. injecting hot aqueous fluid into said selected portion of said formation through said plurality of first wells, and
e. concomitantly with step "d", producing oil from said selected portion of said formation through at least one production well, said production well being spaced in said first direction from said plurality of first wells.

4,620,593

OIL RECOVERY SYSTEM AND METHOD

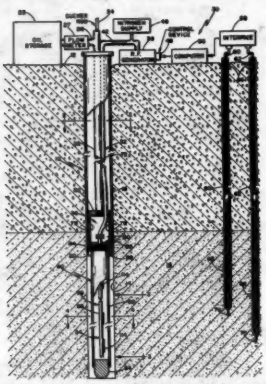
Duane B. Haagensen, 5424 W. Highwood Dr., Edina, Minn. 55436

Filed Oct. 1, 1984, Ser. No. 656,753
Int. Cl.[4] E21B *43/24, 47/12*
U.S. Cl. 166—248 **53 Claims**

1. An oil recovery system comprising a well casing, means within said casing for conducting fluid upwardly through said casing from a subterranean petroleum-bearing formation, means externally located with respect to said casing for generating microwave energy, means within said casing for transmitting said microwave energy downwardly within said casing from said externally located generating means, and a radiator unit connected to the lower end of said transmitting means having a plurality of vertically spaced slots therein, said slotted radiator unit projecting beneath the lower end of said casing

for propagating at least some of said microwave energy into said subterranean formation via said slots.

15. An oil recovery method comprising the step of disposing production tubing and a radio frequency transmission line in a



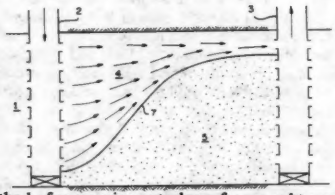
well casing, at least portions of said tubing and said transmission line being in engagement, said transmission line including a waveguide having a plurality of vertically spaced slots therein.

4,620,594

VERTICAL CONFORMANCE STEAM DRIVE OIL RECOVERY METHOD

Wilbur L. Hall, Bellaire, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Aug. 8, 1984, Ser. No. 638,925
Int. Cl.[4] E21B *43/24*
U.S. Cl. 166—263 **6 Claims**



1. A method of recovering petroleum from a subterranean, petroleum-containing formation, which is penetrated by at least a first well, and a second well, said wells being spaced apart and having well perforations in fluid communication with a substantial portion of said formation, said formation being characterized by an overriding steam swept zone high in the formation, from which petroleum has been removed as the result of steam being injected at said first well, and production being taken at said second well, the formation being further characterized by an unswept, petroleum-containing zone underlying said overriding steam swept zone, said method comprising the steps of:

closing those well perforations which define passages of fluid communication between said second well and said formation, excepting those perforations which communicate with a top fraction of the formation encompassing less than half the well length, and those perforations in the bottom fraction of the well which encompass less than half of said well length,

forming a multi-phase fluidic barrier about the upper portion of said second well, said barrier being capable of blocking or deflecting upward flow of a thermal, petroleum recovery fluid, and comprising alternately arranged layers of a liquid and a gaseous component,

injecting a flow of said thermal petroleum recovery fluid into the lower end of said second well, whereby to enter the formation, and

recovering said thermal oil recovery fluid including petroleum, from the formation by other of said wells.

4,620,595

RECOVERING OIL BY INJECTING AMMONIATED AND NITRITED SEAWATER

Hans U. Schutt, Houston, Tex., assignor to Shell Offshore Inc., Houston, Tex.

Filed Aug. 22, 1985, Ser. No. 768,263
Int. Cl.[4] E21B *43/22, 43/20*
U.S. Cl. 166—275 **6 Claims**

1. A waterflood process for recovering oil from a subterranean reservoir in a location in which seawater is economically available, comprising:

incorporating within the seawater, at least prior to its injection into the reservoir, about 10 to 100 ppm ammonia or ammonia-yielding material to raise the pH to near, but less than, about 9.5, plus enough nitrite ion-containing or ion-yielding material to increase the oil displacing capability of the ammoniated seawater without causing an undesirable increase of the rate of growth of sessile bacteria; and

injecting the ammoniated and nitrited seawater into the reservoir to displace the reservoir fluid at substantially the natural reservoir temperature toward a production location from which oil is recovered.

4,620,596

WELL DRILLING, WORKOVER AND COMPLETION FLUIDS

Thomas C. Mondshine, Houston, Tex., assignor to Texas United Chemical Corp., Houston, Tex.

PCT No. PCT/US83/01408, § 371 Date Oct. 31, 1984, § 102(e) Date Oct. 31, 1984, PCT Pub. No. WO85/01309, PCT Pub. Date Mar. 28, 1985
PCT Filed Sep. 15, 1983, Ser. No. 674,378
Int. Cl.[4] E21B *33/138*
U.S. Cl. 166—292 **20 Claims**

1. In a well treating fluid comprising:

a. an aqueous suspension medium comprising an electrolyte solution having a density in the range from about 1.0 g/cm^3 to about 1.2 g/cm^3;

b. a bridging agent; and

c. a viscosifier and suspension additive in the amount of about 0.5 kg/m^3 to about 14 kg/m^3; the improvement which comprises utilizing as said bridging agent at least one hydrated borate selected from the group consisting of calcium borates, sodium calcium borates, and mixtures thereof, wherein said bridging agent has a particle size distribution wherein the range from about 1 micron to about 2000 microns, said treating fluid being free of polymers which contain two hydroxyl groups positioned in the cis-form on adjacent carbon atoms, or on carbon atoms in a 1,3 relationship which complex and cross-link in the presence of the borate anion of said hydrated borate at an alkaline pH.

12. In a well completion and workover method wherein a subterranean formation in a well is contacted with an aqueous treating fluid to form a bridge and seal on said formation, said treating fluid containing an aqueous suspension medium having a density in the range from about 1.0 g/cm^3 to about 1.20 g/cm^3, said density being obtained by dissolving one or more soluble salts in said aqueous suspension medium, and a bridging agent having a particle size distribution within the range from about 1 micron to about 2000 microns and a viscosifier and suspension additive, the improvement which comprises utilizing as said bridging agent a hydrated borate selected from the group consisting of calcium borate, sodium calcium borate,

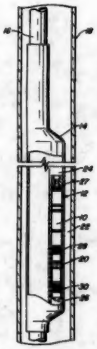
and mixtures thereof, said treating fluid being free of polymers which contain two hydroxyl groups positioned in the cis-form on adjacent carbon atoms, or on carbon atoms in a 1,3 relationship which complex and cross-link in the presence of the borate anion of said hydrated borate at an alkaline pH.

4,620,597

HIGH PRESSURE INJECTION VALVE

C. Paul Lamb, Dallas, Tex., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Oct. 4, 1984, Ser. No. 657,749
Int. Cl.[4] E21B *34/10*; F04F *1/08*
U.S. Cl. 166—373 **24 Claims**



1. A method of mounting a pressure actuated valve including a valve element and a valve body having a bore therethrough in a well comprising the steps of: positioning an axially reciprocal piston having end faces in sealing contact with the interior wall of a bore in the body of the valve to divide the bore into first and second chambers; securing a bellows between one face of the piston and a wall of the second chamber to form first and second compartments in said second chamber; equalizing pressure in the first and second compartments by injecting a compressible pressurized fluid into said compartments such that fluid pressure is substantially equal on opposite sides of the bellows; positioning the valve body in a well such that a flow passage through the valve body is in fluid communication with flow passages inside and outside of a tubing string and in communication with the first chamber in said bore; and changing pressure in the first chamber to axially move the piston through the bore to open the flow passage in the valve.

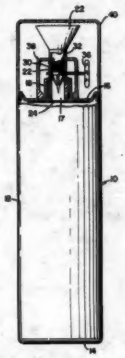
11. A valve for installation in a well comprising a valve body having a bore formed therein; a valve actuator movably disposed in said bore; seal means on said valve actuator dividing said bore into first and second chambers; deformable seal means in said second chamber secured between a wall of the second chamber and said valve actuator dividing said second chamber into first and second compartments; means for selectively precharging said first and second compartments with a pressurized compressible fluid such that substantially equal pressure will exist adjacent opposite sides of said deformable seal means said pressure being near the downhole pressure in the well where said valve is to be operated; a flow passage in said valve body, said flow passage communicating with said first chamber; and valve means secured to said valve actuator, said valve means being positioned to open and close said flow passage; and means for changing pressure in said first chamber for moving said valve actuator.

4,620,598

DISPOSABLE FIRE EXTINGUISHER

Frank F. Reeder, P.O. Box 532, Princeton, N.J. 08542

Filed Oct. 7, 1983, Ser. No. 539,994
Int. Cl.[4] A62C *13/24*
U.S. Cl. 169—30 **17 Claims**



1. An improved portable fire extinguisher apparatus which comprises:

(a) a container which is suitable to be held in one hand adapted to receive fire extinguishing medium under pressure having a sealed outlet port with only one sealing means in one end thereof, said sealing means being secured to the end of said container;

(b) discharge means for said container integrally mounted on the end of said container which contains a conically shaped cutting/piercing member with openings therethrough retained by said discharge means for opening the sealing means in said outlet port without means for restricting the discharge of fire extinguishing medium therethrough, whereby opening said sealing means results in the unrestricted discharge of said fire extinguishing medium until the pressure within said container is substantially vented, and means retained by said discharge means for directing the unrestricted flow of fire extinguishing medium from said container into the atmosphere in a substantially longitudinal direction from the end of said container; and

(c) safety means for said sealing means opening member, the removal of which automatically activates said cutting-/piercing member without further operator handling.

4,620,599

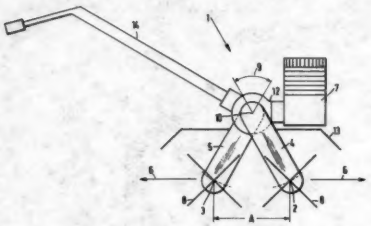
GROUND WORKING MACHINE FOR HOEING, TILLING AND THE LIKE

Wolf D. Zinck, Dessauerstrasse 32, D-6550 Bad Kreuznach, Fed. Rep. of Germany

Filed Nov. 22, 1983, Ser. No. 554,354
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1982, 3244132; Nov. 29, 1982, 3244133; Nov. 29, 1982, 3244134
Int. Cl.[4] A01B *33/02*
U.S. Cl. 172—42 **14 Claims**

1. A ground-working machine for hoeing, tilling, and the like comprising two motor-driven, rotating power take-off shafts, said shafts carrying ground-working tools, means for mounting said shafts on the machine crosswise to the direction of travel of the machine, a transmission drivingly engaging each of said shafts, means for coupling each transmission to a power source, and swivel mounting means for mounting said transmissions to swivel in relation to each other in order to change the distance between the two power take-off shafts taken in the direction of travel of the machine, said swivel

mounting means allowing said shafts to swivel between a first position where the circles which are described by the tips of



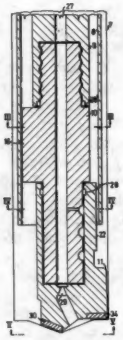
said ground-working tools when rotated overlap each other and a second position where said circles are free of overlap with each other.

4,620,600

DRILL ARRANGEMENT

Jan E. Person, Henriksdalsringen 17[5], S-131 32 Nacka, Sweden

Filed Sep. 12, 1984, Ser. No. 649,731
Claims priority, application Sweden, Sep. 23, 1983, 8305147
Int. Cl.[4] E21B 7/00
U.S. Cl. 175—73 **10 Claims**



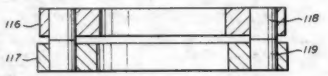
1. An arrangement for drilling a hole in soil and/or rock while simultaneously lining the drilled hole with a lining tube, said arrangement comprising an eccentrically mounted drill bit, an energy transfer means selected from a sinker bore hammer, a drill stem or like element, said means having a lower end transmitting the total drilling energy directly to said eccentrically mounted drill bit; and a guide adjacent and above said drill bit, the guide being non-rotatably mounted on said lower end of said energy transfer means, the drill bit being mounted on said lower end of said means for rotation in a plane perpendicular to the bore hole relative said lower end of said means, the entire drill bit being rotatable to relative to said guide between a first position constituting an eccentric drilling position in which a cutting part of the drill bit produces in front of the lining tube a hole whose diameter is greater than the outer diameter of the lining tube, and a second terminal position in which the drill bit together with the guide is accommodated within the lining tube and can be withdrawn therethrough; the angle of limited rotation of the drill bit relative the lower end and the guide being at least 90°.

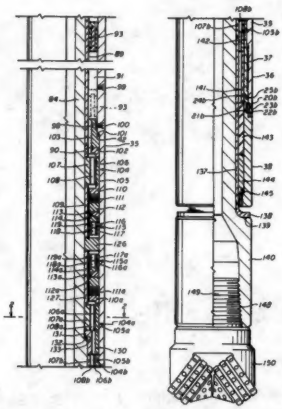
4,620,601

WELL DRILLING TOOL WITH DIAMOND THRUST BEARINGS

Dave D. Nagel, Houston, Tex., assignor to Maurer Engineering Inc., Houston, Tex.

Filed Sep. 28, 1981, Ser. No. 306,290
Int. Cl.[4] E21B 4/02
U.S. Cl. 175—107 **18 Claims**





1. A down hole well drilling tool adapted for connection at one end to the lower end of a drill string and at the other end to a drill bit to be driven thereby, comprising

tubular housing means and rotary shaft means supported therein and extending therefrom and adapted to support a drill bit,

motor means in said housing means actuated by flow of drilling fluid therethrough and operable to rotate said shaft means,

bearing means in said housing means supporting said rotary shaft means,

lubricating means for said bearing means, in which

said bearing means comprises a radial bearing having one bearing member supported on said housing and another bearing member supported on and rotatable with said rotary shaft means,

an annular thrust bearing for vertical or longitudinal thrust loads comprising a first bearing member supported on said housing and a second bearing member supported on and rotatable with said rotary shaft means,

said first thrust bearing member comprising a first annular supporting plate,

a plurality of insert members equally spaced around said first annular plate, extending longitudinally of said tool and having flat co-planar continuous polycrystalline diamond bearing surfaces extending above the surface of said first annular plate,

said second thrust bearing member comprising a second annular supporting plate, and

a plurality of insert members equally spaced around said first annular plate, extending longitudinally of said tool toward said first annular plate and having flat co-planar continuous polycrystalline diamond bearing surfaces extending below the surface of said second annular plate and engag-

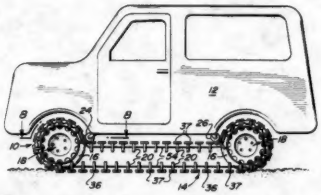
ing said first named insert bearing members along a common plane for bearing movement thereagainst.

4,620,602

TRACK DRIVE CONVERTER

Allen Capriotti, 217 High St., Glendon Heights, Easton, Pa. 18042

Filed Jul. 1, 1985, Ser. No. 752,459
Int. Cl.[4] B62D *55/04, 55/30*
U.S. Cl. 180—9.21 **12 Claims**



1. An apparatus to convert a standard wheel drive vehicle into a track drive vehicle comprising:

(a) a removable continuous track intended to be used as a pair, sized to overfit and span both in width and length a set of wheels comprising a rear and front wheel on the same side of a vehicle including the vehicle's tires, said track including:

(i) a plurality of elongated track link sets, each sets having two ends and two sides,

said track link sets each including three generally equally-sized, parallel rods, two omegashaped end brackets, each bracket including attachment plates, one on each bracket end, one bracket at each link set end positioned in a plane perpendicular to said rod ends with said center rod's ends attached to the midpoint of the curve of said brackets and said side rods'ends attached to opposing points on said brackets' sides, said brackets being movably and compressably joined to each other by connectors through said attachment plates at each end of each said bracket, preselected links including drive teeth, one said tooth located at and perpendicular to each end of each of said preselected link sets proximate said set's end midpoint; and,

(ii) a set of connectors, one at each track link end;

(b) a generally circular wheel disc used as a set of two and mounted one on each side of each of said vehicle wheels, said disc diameter being presized to radially receive said teeth, each disc set aligned in parallel planar juxtaposition with its set member, said disc including at its periphery a plurality of equally spaced-apart indent means to receive and mesh with said drive teeth which lie adjacent to it; and,

(c) a track tensioning assembly mounted on said vehicle in working relationship with said track,

so that when a track is placed over and around a set of wheel mounted tires and said drive teeth are meshed with said disc set, said apparatus thereby converts wheel drive to track drive for said vehicle.

4,620,603

ARTICULATED TOW VEHICLE

Allen R. Reeves, Antioch, Tenn., and Charles F. Carson, Greensboro, N.C., assignors to Blue Bell, Inc., Greensboro, N.C.

Filed Feb. 19, 1985, Ser. No. 703,111
Int. Cl.[4] B62D *51/04*
U.S. Cl. 180—19.1 **4 Claims**

1. An articulated tow vehicle for wheeled skids, pallets, and like material handling devices of the type which include a support platform supported by a pair of wheels at at least one end, the opposite end including a tongue having an aperture therein by means of which said tow vehicle may be selectively and releasably attached thereto to lift and tow said skid, said tow vehicle comprising:

(a) a jack housing including:

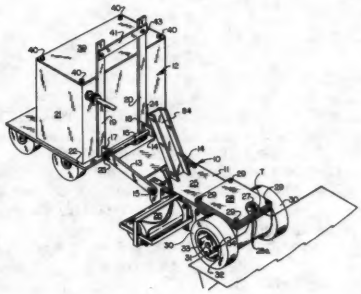
(i) a jack platform having a forward portion and a rear portion;

(ii) a pair of spaced wheels fixedly attached to a shaft;

(iii) said shaft rotatably mounted to said jack platform intermediate said forward portion and said rear portion whereby said wheels act as a fulcrum when said rear portion is lifted;

(iv) a drive motor mounted on said jack platform in driving relation to said shaft whereby activation of said drive motor causes rotation of said shaft and wheels;

(v) an upstanding locking post mounted on the upper side of said jack platform forwardly of the axis of said shaft for selective engagement with the aperture in said skid tongue, said engagement being effected by tilting the



rear portion of said jack platform until said locking post is lowered and can be inserted into the skid tongue, then lowering said rear portion;

(vi) a handle lever extending rearwardly and upwardly from the rear portion of said jack platform rearwardly of the axis of said shaft for effective said tilting movement;

(b) a power pack platform supported by a plurality of wheels whereby said power pack is independently supported separate of said jack platform, an electrical power source mounted on said power pack platform and electrically connected to said drive motor;

(c) a link means pivotally connecting, at each end thereof about a horizontal axis, the rear portion of said jack platform to the power pack platform, whereby tilting of the rear edge portion of said jack platform causes a resulting forward movement of said power pack platform and may be accomplished without lifting and tilting said electrical power source.

4,620,604

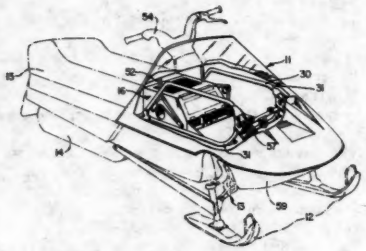
SNOWMOBILE FRAME STRUCTURE

Jean-Guy Talbot, Valcourt, Canada, assignor to Bombardier Inc., Montreal, Canada

Filed Feb. 27, 1985, Ser. No. 706,186
Int. Cl.[4] B62M *27/00*
U.S. Cl. 180—190 **4 Claims**

1. A snowmobile comprising: a front portion supported on a pair of spaced steerable skis and housing an engine coupled to drive an endless track which supports the rear portion of the snowmobile and is positioned within a longitudinally extending track tunnel of inverted U-shape, wherein two transversely spaced tubular side frame units form a rigid attachment to the front end of the track tunnel to be integral therewith and extend forwardly therefrom in a generally upright disposition, said side frame units being interconnected by transverse brac-

ing means to form a frame structure that provides a mounting for the snowmobile engine, each said side frame unit comprising one continuous length of tube that is bent to form a closed loop.



4,620,605

SUSPENSION FOR ELECTRO-ACOUSTICAL TRANSDUCERS

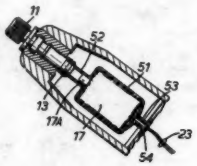
Gordon B. Gore, 15 McArdle Rd., Ermington, New South Wales 2115; Malcolm J. Clark, 3 Lebanon St., Dandenong, Victoria 3175, and John R. Le Strange, 2 Francis St., Strathfield West, New South Wales 2140, all of Australia

PCT No. PCT/AU85/00001, § 371 Date Oct. 3, 1985, § 102(e) Date Oct. 3, 1985, PCT Pub. No. WO85/03185, PCT Pub. Date Jul. 18, 1985

PCT Filed Jan. 3, 1985, Ser. No. 776,143

Int. Cl.[4] A61B *7/02*

U.S. Cl. 181—135 **6 Claims**



1. A mounting suspension for an electro-acoustical transducer to be supported in a predetermined location relative to an acoustic input or output of an appliance, said suspension comprising a moulding of elastomeric material, said moulding comprising:

(a) a transducer-supporting region having a shape which corresponds to the external shape of the transducer, said transducer-supporting region being adapted to be a tight fit around the transducer;

(b) a tubular region, extending from said transducer-supporting region, the end portion of said tubular region which is remote from the transducer-supporting region being close fitting over, and supportable by, the end region of a rigid tubular projection extending from the acoustic input or output of the appliance, said tubular region having an end portion closest to the transducer supporting region which is close fitting over said acoustical inlet or outlet tubular projection of the transducer when the transducer is located within the transducer-supporting region and the suspension is incorporated into the appliance; and

(c) a tubular foot, extending from the end of the transducer-supporting region which is remote from said tubular region, said tubular foot including an annular flange extending radially from the axis of the tubular foot, said flange being adapted to retain the tubular foot in a position in which the tubular foot extends through a aperture formed in a mounting plate of the appliance.

4,620,606

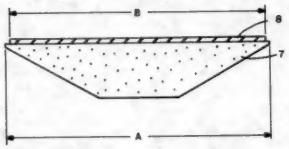
LOUDSPEAKER OF PLANE DIAPHRAGM TYPE

Akihisa Suzuki, Higashihiroshima, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 3, 1985, Ser. No. 740,211

Int. Cl.[4] H04R *7/12*

U.S. Cl. 181—170 **7 Claims**



1. A loudspeaker of plane diaphragm type comprising a plane diaphragm with a surface and a single-piece skin-like material which is smaller than said plane diaphragm and is pasted on said surface, the peripheral areas of said surface being substantially entirely exposed.

4,620,607

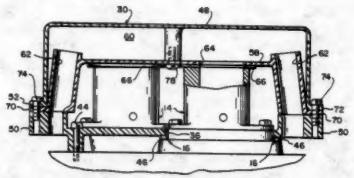
AIR SILENCER FOR AN INTERNAL COMBUSTION ENGINE

Paul W. Breckenfeld, Winthrop Harbor; George L. Broughton; James E. Macier, both of Waukegan, and Ronald E. Gibbs, Mundelein, all of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Aug. 9, 1984, Ser. No. 640,025

Int. Cl.[4] F02M *35/00*

U.S. Cl. 181—229 **15 Claims**



1. Silencing apparatus for an internal combustion engine having mounted thereon an intake manifold and a carburetor communicating with the intake manifold, said apparatus comprising an air silencer for silencing air traveling to the carburetor and including a first portion defining a silencing chamber and a second portion constituting a support member, and means for mounting said support member on the intake manifold independently of the carburetor.

4,620,608

ROLLING SCAFFOLDING BASE

William E. Gilbreath, Huffman, Tex., assignor to Builders Equipment and Tool Manufacturing Company, Houston, Tex.

Filed Oct. 24, 1985, Ser. No. 791,118

Int. Cl.[4] E04G *1/24*

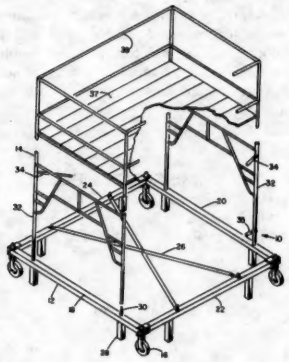
U.S. Cl. 182—17 **20 Claims**

1. A rolling scaffolding base having a generally rectangular configuration and a plurality of roller assemblies, each of said roller assemblies having a roller member with a rolling ground-engaging surface and an upward extending shaft, each of said

roller assemblies being positioned adjacent a corner of said rectangular configuration, the improvement comprising:

first, second, third, and fourth structurally separable elongate base side members each lying in a substantially horizontal plane and forming one side of said rectangular configuration;

each of said base side members including a roller shaft receiving aperture adjacent each end of said elongate member;



adjacent ends of said side members being removably interconnected by a respective one of said roller shafts;

two or more stop members adjacent each of said roller assemblies and having a stop surface terminating a selected distance above said ground engaging surface at a position substantially below said horizontal plane; and

one of said two or more stop members being fixedly secured to one of said elongate base side members and another of said two or more stop members being fixedly secured to another of said elongate base side members.

4,620,609

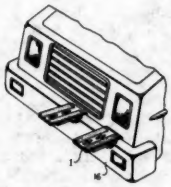
REMOVABLE BUMPER STEP FOR VEHICLES

Donald E. Elsten, 23 Gaineswood, Baxter Springs, Kans. 66713

Filed Feb. 15, 1985, Ser. No. 702,385

Int. Cl.[4] B60R *3/00*

U.S. Cl. 182—92 **1 Claim**



1. A removable bumper step for vehicles having a bumper with an upper, generally horizontal surface and a free upper edge projecting toward the body of the vehicle, said step comprising:

(a) a rigid upper plate having an upper, generally planar foot supporting surface and a lower surface, said upper plate terminating in a front end;

(b) said plate front end being bent downwardly and rearwardly into a hook configuration adapted to engage said bumper free edge when said plate is extending generally horizontally over said bumper upper surface;

(c) a rigid lower plate engaged with said upper plate;

(d) said lower plate having a forward end portion, a central portion, and a rearward end portion integrally connected;

(e) said lower plate first end portion contacting said upper plate lower surface rearwardly of said hook configuration, said lower plate rearward end portion contacting said upper plate lower surface rearwardly of said central portion, said lower plate central portion being spaced downwardly from said upper plate lower surface, whereby said upper plate and said lower plate central portion define a central cavity;

(f) said upper plate having first and second openings extending therethrough and longitudinally thereof;

(g) spacer means in said central cavity and having opposite ends contacting said upper plate lower surface and said lower plate central portion;

(h) first fastener means received in said first opening and extending through said spacer means and said lower plate central portion for adjustably securing said upper plate and said lower plate in a fixed position with respect to said bumper; and

(i) second fastener means received in said second opening and extending through said upper plate and said lower plate rearward end portion for adjustably securing said upper plate and said lower plate in a fixed position with respect to each other.

4,620,610

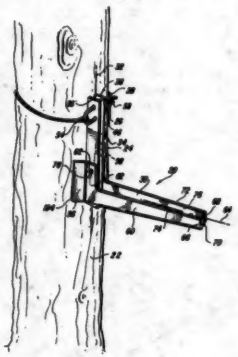
TREE STEP

Benny S. Southard, 315 S. Chapman, Greensboro, N.C. 27403

Filed Dec. 19, 1985, Ser. No. 810,487

Int. Cl.[4] A63B *29/04, 27/00*

U.S. Cl. 182—92 **11 Claims**



1. A tree step comprising:

a first member orientable to have a major axis thereof extended essentially vertically when said tree step is in an installed configuration on a tree;

means connected proximate a first end of said first member for substantially encircling a tree; and,

a second member pivotally connected to said first member proximate a second end of said first member, said second member being pivotable to a first position in said installed configuration wherein a portion of said second member is oriented to serve as a support for a foot placeable thereon, and wherein said second member further comprises a pair of spaced-apart flanges which when said tree step is in said installed configuration are on opposite sides of said first member and angled outwardly from said major axis of said first member to provide tree-contacting surfaces.

4,620,611

SAFETY RAIL MEANS FOR LADDERS

John C. Good, Rosslyn Park, Australia, assignor to Robert Henry Haysom and David James Lindsey, both of Salisbury South, Australia

Filed Dec. 10, 1985, Ser. No. 807,366
Claims priority, application Australia, Dec. 14, 1984, PG8585
Int. Cl.[4] E06C 7/18
U.S. Cl. 182—106 5 Claims

1. A ladder comprising a ladder portion having stiles, rungs extending between the stiles,

a platform joining the upper ends of the stiles and extending rearwardly therefrom,

support stays, first hinge means joining the upper ends of the support stays to the rear end of the platform,

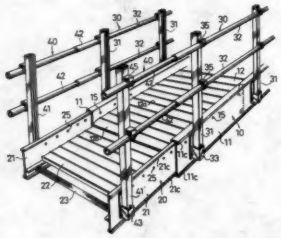
a safety rail, further hinge means also joining the safety rail to the rear end of the platform so that the safety rail is movable between an in-use position where it extends upwardly from said platform rear end, and retracted position where it projects forwardly of the platform.

4,620,612

EXPANSIBLE CORRIDOR

Takahiro Enoki, Hayama, and Takashi Hashida, Funabashi, both of Japan, assignors to Nisso Sangyo Co., Ltd., Japan

Filed May 2, 1985, Ser. No. 729,692
Int. Cl.[4] E04G 5/08
U.S. Cl. 182—113 18 Claims



1. A corridor assembly for spanning a plurality of horizontal supports, comprising:

a main corridor having a pair of spaced-apart hollow girder members, each girder member having an outer shell and an inner longitudinal opening, and a horizontal scaffolding plate connected between said hollow girder members;

a sub-corridor having a pair of spaced-apart girder members telescopically received for horizontal sliding in respective ones of said hollow girder members, and a horizontal scaffolding plate connected between said pair of girder members of said sub-corridor, said scaffolding plates of said main corridor and said sub-corridor being at different horizontal locations and said scaffolding plate of said sub-corridor extending through said longitudinal openings of said hollow members so that said sub-corridor can telescopically slide with respect to said main corridor;

a first foldable handrail connected to each of said hollow girder members of said main corridor foldable from an upright position on said hollow girder members to a folded position lying in a plane substantially parallel to a plane of said horizontal scaffold plate of said main corridor; and

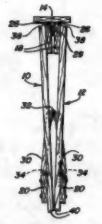
a second foldable handrail connected to each of said girder members of said sub-corridor, each second foldable handrail foldable from an upright position to a folded position lying substantially parallel to said scaffolding plate of said sub-corridor, each of said second foldable handrails being connected to one of said first foldable handrails so that said first and second handrails remain connected while said sub-corridor telescopically slides with respect to said main corridor.

4,620,613

SELF-CLOSING SAW HORSE

Carl N. Albertson, R.R. #2-Box 90, Staatsburg, N.Y. 12580

Filed Aug. 12, 1985, Ser. No. 764,757
Int. Cl.[4] B27B 21/00; F16M 11/00
U.S. Cl. 182—153 6 Claims



1. A folding saw horse comprising a pair of trestle-like frames each having a transverse upper member, a transverse lower member, and diverging legs connected between the upper and lower members, hinge means pivotally interconnecting the upper members of the respective frames for folding movements to open and close the saw horse, and folding brace means connected between the respective lower members of the frames and located substantially centrally between the legs to support the saw horse in open position, wherein the brace means comprises a pair of links having a hinged elbow connection therebetween, and a spring hinge connected between each link and the respective lower frame member so that folding of the elbow connection from the open position of the saw horse causes the spring hinges to urge the frames toward a closed position.

4,620,614

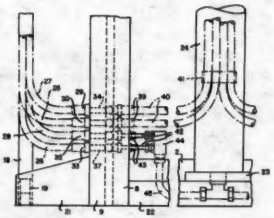
MULTIPLY EXTENSIBLE LIFTING FRAMES

Kurt Knappe, Sulzbach, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Sep. 9, 1985, Ser. No. 774,064
Claims priority, application Fed. Rep. of Germany, Sep. 14, 1984, 3433861
Int. Cl.[4] B66B 9/20
U.S. Cl. 187—9 E 5 Claims

1. In a multiply extensible lifting frame for lift loaders having a standing mast connected with the lift loader frame and a middle mast section capable of sliding against it and an inner, farthest extensible mast section capable of sliding against the middle mast section, each mast section having two lateral columns, at least one lifting press cylinder in the lifting frame connected with the standing mast, a piston rod of the lifting press cylinder being capable of sliding in the lifting press cylinder and connected with the middle mast section, at least one

chain connected at one end with the standing mast and at the other end with the lower end of the inner mast section, and carried over a roller supported at the middle mast section, an additional hydraulically actuated element connected with the inner mast section, a roller supported on this additional hydraulically actuated element, a chain carried over said roller on the additional hydraulically actuated element, said chain being fastened at one end at the inner mast section and at the other end on the lift slide, and rollers carried on one of the columns of the inner mast section and the lift slide are capable of sliding close by the inner side or the front side of the column of the inner mast section, the improvement comprising hoses pro-



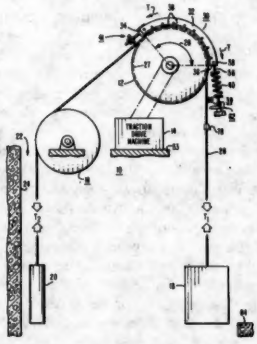
vided for supplying the additional hydraulically actuated element connected with the farthest extensible mast section are carried in the same plane in which at least one chain connected on the one hand with the standing mast and on the other with the farthest extensible mast section is also carried and that each hose is connected with a connection that is inserted into a borehole having a first port on the side of the front flange of the column of the inner mast section and a second port also at the rear side of the same column of the inner mast section, a connection to which a line that leads to the additional hydraulically actuated element is connected, is screwed into this second port of the borehole.

4,620,615

ELEVATOR SYSTEM

Arnold M. Morris, and Kim E. Morris, both of Chester Township, Morris County, N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 14, 1985, Ser. No. 798,256
Int. Cl.[4] B66B *11/08*
U.S. Cl. 187—22 **7 Claims**



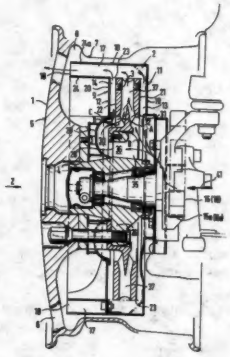
1. An elevator system, comprising:
an elevator car,
a counterweight,
a drive sheave having a peripheral groove,
a wire rope having first and second ends, said wire rope being reeved about said peripheral groove with a predetermined angle of wrap,
said elevator car and counterweight being connected to the first and second ends, respectively, of said wire rope,
drive means for rotating said drive sheave to move said elevator car and counterweight in predetermined normal travel paths,
traction enhancement means,
said traction enhancement means including an arcuate frame having first and second ends,
means fixing the first end of said frame adjacent to said wire rope, near one end of the angle of wrap,
a plurality of rollers on said frame disposed to contact said wire rope in the angle of wrap,
means connected to the second end of said frame for applying a bias to the frame which biases the rollers against said rope,
and means for releasing the bias applied to said frame in response to predetermined travel of said elevator car beyond said normal travel path.

4,620,616

COOLING DEVICE FOR DISC BRAKES, ESPECIALLY FOR AUTOMOTIVE VEHICLES

Roland Martin, Aalen-Unterkochen, Fed. Rep. of Germany, assignor to Dr. Ing. H.c.F. Porsche Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Jun. 14, 1984, Ser. No. 620,565
Claims priority, application Fed. Rep. of Germany, Jun. 16, 1983, 3321750
Int. Cl.[4] F16D *65/847*
U.S. Cl. 188—71.6 **14 Claims**



1. In a motor vehicle having a wheel including a rim cover portion and at least one opening in the rim cover portion, a wheel hub having a hub air duct through which air can pass and a disc brake unit including a disc member having first and second friction rings and at least one radially extending air duct disposed between the first and second friction rings,
a guide means for conducting air into the hub air duct, through the disc brake unit, and out through the at least one rim cover opening for cooling the disc brake unit, comprising an air guide housing means generally enclosing the disc member for forming external air ducts externally of the friction rings, the housing means including influx openings positioned for conducting air to the hub air duct, the external air ducts, and the radially extending air duct, and efflux openings cooperatively positioned with the at least one rim cover opening to conduct air from the housing means to the at least one rim cover opening, wherein said air guide housing includes means disposed radially inwardly of the brake disc friction rings

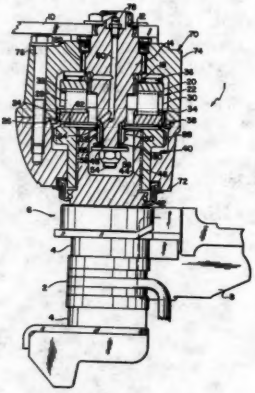
for forcibly directing partial air cooling streams to flow in the radial direction through the at least one radially extending air duct in generally close proximity to the disc member, wherein said external air ducts comprise first and second, axially opposed, radially extending external air ducts and the air guide housing means includes a cup-shaped inner member including said efflux openings and a cup-shaped outer member connected to the cup-shaped inner member and including said influx openings, the disc member being disposed between the inner and outer cup-shaped members.

4,620,617

AUTOMATIC BRAKE ADJUSTER

James L. Weber, West Bloomfield, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Feb. 4, 1985, Ser. No. 698,066
Int. Cl.[4] F16D 65/56
U.S. Cl. 188—196 BA **10 Claims**



1. Internal automatic brake adjuster apparatus for disc brakes comprising:

(a) a shaft having first and second ends; wherein the second end of the shaft defines a spindle portion;

(b) lever means connected to a first end of the shaft for rotating the shaft;

(c) stop means mounted at an end of the spindle portion;

(d) annular sleeve spline means mounted on the spindle portion of the shaft adjacent the second end having radially projecting and axially extending splines thereon;

(e) spring friction clutch means mounted on the second end of the shaft between the stop means and a face of the annular sleeve whereby the friction clutch means turns the annular sleeve spline means with the shaft until the annular spline means encounters a predetermined resistance whereupon the shaft turns with respect to the annular spline means;

(f) piston means having a radial inward portion and a radial outward portion wherein the inward portion has a brake applying face remote from the first end of the shaft and defines an axially extending cavity which receives the second end of the shaft and wherein the radial outward portion comprises an outer collar having internal threads engaging external threads on the inner piston portion whereby the outer piston portion may be turned relative to the inner piston portion to extend the length of the piston means;

(g) inward projection means comprising an annular plate having an annular outward portion connected to a face of the outer piston portion in a direction of the first end of the shaft, the annular plate having a central opening with radially inward projecting splines engaging the splines on the annular sleeve; and

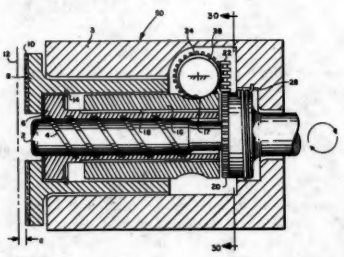
(h) actuator means mounted on the shaft and engaging the piston means for moving the piston means in a brake applying direction upon turning of the shaft whereby turning the shaft causes the friction clutch to turn the annular sleeve spline means, and the annular sleeve spline means to turn the annular plate and the annular plate to turn the outer piston portion with respect to the inner piston portion to adjust the piston length until the actuator means forces the piston means in an axial direction, whereupon the friction clutch slips and the annular sleeve spline means no longer turns the annular plate.

4,620,618

BRAKE SHOE ADJUSTER

Frederick R. Monick, Chicago, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Apr. 15, 1985, Ser. No. 723,027
Int. Cl.[4] F16D 65/56
U.S. Cl. 188—196 BA **10 Claims**



1. An automatic slack adjuster for maintaining a substantially constant clearance between a braking member and a rotatable braking surface in a brake released condition of a brake assembly of the type including an elongate power screw mounted for rotation and having threads threadingly engaged with threads of a rotatable nut member disposed coaxially thereabout and operative to move in opposite axial directions along the power screw and cause the braking member to correspondly move in opposite brake applying and brake releasing directions in response to corresponding rotation of the power screw in opposite directions upon actuation thereof by application and release of the brake by an operator, said adjuster comprising:

an adjustment member disposed coaxially about the nut member and secured against axial movement with respect thereto, said adjustment member provided with driving means enabling the adjustment member to be driven in opposite rotational directions about the power screw and in engaged relationship with the nut member by means enabling the nut member to move in said opposite axial directions with respect to both the power screw and the adjustment member upon application and release of the brake by the operator and to rotate the nut member at least in a direction causing the nut member to advance axially along the power screw in a direction causing the braking member to move towards the braking surface upon application of the brake by the operator,

drive train means driven by said power screw and operative to drive said adjustment member in said opposite rotational directions,

clutch means cooperating with said drive train means and operative to prevent said adjustment member from continuing to rotate upon engagement between the braking member and the braking surface, and

rotational direction control means, said control means cooperating with said drive train means and operative to limit

rotation of said adjustment member only in a direction enabling said nut member to move said braking member towards said braking surface.

4,620,619

VARIABLE-DAMPING-FORCE SHOCK ABSORBER

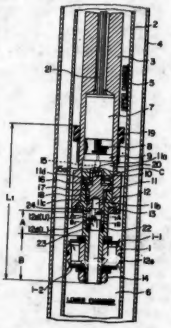
Junichi Emura, Ebina, and Issei Kanari, Tokyo, both of Japan, assignors to Atsugi Motor Parts Co., Ltd., Japan

Filed Feb. 2, 1983, Ser. No. 463,334

Claims priority, application Japan, May 20, 1982, 57-85548; Sep. 13, 1982, 57-159117

Int. Cl.[4] F16F 9/50

U.S. Cl. 188—319 4 Claims



4. A hydraulic damper comprising:

a cylinder containing therein hydraulic liquid;

a piston slidable within said cylinder and partitioning the interior thereof into first and second chambers;

damping force generating means mounted on said piston for generating damping force in the extension and contraction strokes of the damper;

a piston rod connected to said piston and extending through one of said chambers to the exterior of said cylinder;

an internal chamber formed in said piston rod and directly communicating with said first chamber;

first and second by-pass passages by-passing said damping force generating means and connecting said second chamber with said internal chamber and thereby with said first chamber, each of said first and second by-pass passages comprising a plurality of openings of different cross-sectional area extending through said piston rod;

check valve means for preventing liquid flow through said first by-pass passage upon movement of said piston in one direction within said cylinder and for permitting liquid flow therethrough upon movement of said piston in the opposite direction;

said second by-pass passage being open to permit liquid flow therethrough during movement of said piston in both said directions; and

adjusting valve means for selectively adjusting the effective passage area of both said first and second by-pass passages, said adjusting means comprising a valve member rotatably mounted in said piston rod, and means for rotating said valve member to open a selected at least one of said openings of each of said first and second by-pass passages.

4,620,620

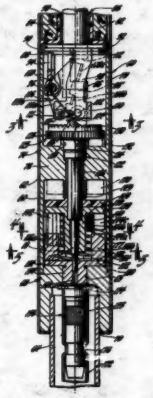
ACTUATOR FOR ADJUSTABLE HYDRAULIC DAMPER

Daniel U. Johnston; Thomas R. Sowash, and Richard D. Watson, all of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 12, 1984, Ser. No. 588,571

Int. Cl.[4] F15F 9/50

U.S. Cl. 188—319 1 Claim



1. In a hydraulic damper between sprung and unsprung masses of a vehicle including a hollow piston rod connected to said sprung mass, a fluid filled cylinder connected to said unsprung mass, a piston connected to said piston rod and slidable in said cylinder along a longitudinal axis of said damper during relative movement between said sprung and said unsprung masses and dividing said cylinder into a compression chamber and a rebound chamber, and valve means on said piston permitting fluid flow thereacross between said compression and said rebound chambers including a rotor rotatable between a plurality of control positions corresponding to different fluid flow rates for variable damping and subject to pressure induced temporary rotary immobility, a rotary actuator comprising, means within said hollow piston rod defining a housing rigidly connected to said piston rod, an output driver supported on said housing for rotation about said longitudinal axis and connected to said rotor for rotation as a unit therewith, a solenoid means on said piston rod including a plunger extending into said housing and having a longitudinal or stroke between an at-rest position and a retracted position, an actuator lever engageable by said plunger and supported on said housing for pivotal movement between a retracted position and an extended position in response to stroking of said plunger from said at-rest position to said retracted position, a pawl pivotally supported on said actuator lever, an input driver supported on said housing for rotation about said longitudinal axis through a plurality of angularly spaced positions corresponding to said control positions of said rotor, means on said input driver defining a plurality of face teeth in a plane perpendicular to said longitudinal axis, spring means biasing said pawl into engagement on said face teeth so that stroking of said plunger and pivotal movement of said actuator lever from said retracted to said extended position causes said pawl to rotate said input driver in step-wise fashion through said plurality of angularly spaced positions, said spring means biasing said input driver in the direction of said longitudinal axis against said housing, an intermediate driver supported on said housing for rotation about said longitudinal axis and having an axially extending abutment thereon, means rigidly connecting said input driver to said intermediate driver, means on said abutment defining a first beveled end face, means on said output driver defining an axially extending arm rotatable as a unit

therewith, means on said arm defining a second beveled end face engageable on said first beveled end face, and a torsion spring between said intermediate driver and said output driver operative to normally hold said second beveled end face against said first beveled end face so that said intermediate and said output drivers are unitarily rotatable and further operative to permit rotation of said intermediate driver relative to said output driver during periods of rotor immobility and to thereafter rotate said output driver when rotor mobility returns until said second beveled end face engages said first beveled end face thereby to locate said rotor in the one of said control positions corresponding to the one of said angular positions of said input driver, said first and said second beveled end faces cooperating to urge said intermediate and said input drivers axially against said spring means thereby to cushion the shock of engagement of said second beveled end face on said first beveled end face.

4,620,621

CENTRIFUGALLY ACTIVATED ROLLER CLUTCH/OVERRUNNING CLUTCH

Elaine S. Kulczycki, Troy, and Paul E. Lamarche, Utica, both of Mich., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Apr. 2, 1984, Ser. No. 595,857
Int. Cl.[4] F16D *41/20, 43/14, 47/04, 47/06*
U.S. Cl. 192—3.31 **9 Claims**

1. A centrifugally-actuated roller cluton comprising an outer race having a smooth, cylindrical interior surface, an inner race comprising a two-way wave hub for locking of the races in both directions of rotation and having a plurality of circumferentially spaced pockets in the exterior surface thereof, each pocket having a pair of oppositely extending inclined intersecting ramps, a plurality of clutch rollers received in said pockets, each of said rollers including a central annular channel therein defining a reduced diameter axle, a garter spring received in the channels of said rollers urging the rollers inwardly into said pockets, and a spacer ring encompassing the wave hub and received in the channels of said rollers, said ring having a plurality of circumferentially spaced outwardly opening notches receiving the axles of said rollers to separate the clutch rollers and locate them in said hub pockets.

4,620,622

WHEEL HUB CLUTCH ASSEMBLY

Takayoshi Onodera, Toyota, and Tooru Kagata, Kariya, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota and Aisin Seiki Kabushiki Kaisha, Kariya, both of, Japan

Filed Sep. 5, 1984, Ser. No. 647,384
Claims priority, application Japan, Sep. 5, 1983, 58-162930
Int. Cl.[4] F16D *11/00;* **B60K** *17/34*
U.S. Cl. 192—36 **5 Claims**

1. A wheel hub clutch assembly comprising:

a cylindrical body provided therein with internal splining and to be attached to a wheel hub;

an inner sleeve contained within said cylindrical body to be fixedly mounted on a drivable axle;

a clutch member provided thereon with external splining and splined to said inner sleeve to be maintained in a first position in which the external splining of said cluth member is disengaged from the internal splining of said body to uncouple said wheel hub from said axle and to be axially moved from the first position to a second position in which the external splining of said clutch member is engaged with the internal splining of said body to drivingly couple said wheel hub to said axle;

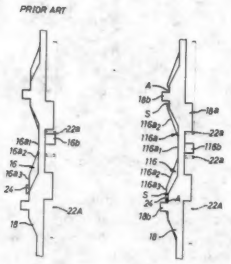
a cam ring formed at one side thereof with a cam face and rotatably mounted on said inner sleeve;

a cam follower arranged between said clutch member and said cam ring and splined to said inner sleeve to cooperate with the cam face of said cam ring to be moved toward and away from said clutch member in response to rotation of said inner sleeve;

a return spring for loading said cam follower toward the cam face of said cam ring;

means for connecting said cam follower with said clutch member;

a brake assembly mounted within said cylindrical body and associated with said cam ring for applying the brake to said cam ring by engagement therewith in response to rotation of said cam follower;



a slide ring rotatably coupled over said cam ring and associated with said cam follower and said brake assembly for releasing the brake by engagement with said brake assembly when rotated by engagement with said cam follower in clutching operation.

wherein the cam face of said cam ring includes a valley portion for receiving thereon said cam follower to maintain said clutch member in the first position, a slope portion extending circumferentially and axially outwardly from said valley portion to effect axial movement of said cam follower toward and away from said clutch member by engagement with said cam follower, and a flat ridge portin extending circumferentially from said slope portion for receiving thereon said cam follower to effect and maintain engagement of the external splinging of said clutch member with the internal splining of said body, and

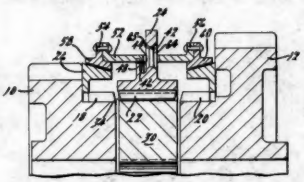
wherein the flat ridge portin of said cam ring is formed with a recess which extends circumferentially in a predetermined distance to receive said cam follower therein so as to permit abutment of said cam follower against said slide ring in the clutching operation, one end surface of said recess being tapered to effect disengagement of said cam ring from said brake assembly by engagement with said cam follower in the clutching operation.

4,620,623

PIN LOADING CONE SYNCHRONIZING CLUTCH

John S. Barksdale, Ypsilanti, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 28, 1985, Ser. No. 695,770
Int. Cl.[4] F16D 23/06
U.S. Cl. 192—53 E 8 Claims



1. A synchronizing clutch for driveably connecting a rotatably supported member to a shaft comprising:

clutching teeth fixed to the rotatably supported member;

a cone element having a conical outer surface fixed to the rotatably supported member;

a hub rotatably and displaceably fixed to the shaft, located adjacent the rotatably supported member and having a set of spline teeth;

a clutch sleeve displaceably mounted on the hub for movement into engagement with the clutching teeth, having spline teeth engaged with the spline teeth of the hub and; a radial web having a slot therethrough, the web having a blocking surface located at each opposite axial side thereof;

a cone arm including a conical inner surface adapted to engage a conical surface on the cone element, a blocking surface adapted to contact the blocking surface of the clutch sleeve as the clutch sleeve is moved axially toward the rotatably supported member, for moving the conical inner surface of the cone arm against the cone element as the clutch sleeve moves toward the rotatably supported member, a recess located on the radially inner surface facing the clutch sleeve and wherein the conical inner surface is fixed to the cone arm by welding or riveting after the cone arm is inserted through the clutch sleeve slot; and

spring means for resiliently, releasably connecting the clutch sleeve and cone arm before the cone element and conical inner surface of the cone arm engage and for disconnecting the cone arm and clutch sleeve after the conical inner surface of the cone arm and cone element engage, including a wire loop retained in position with respect to the clutch sleeve for axial movement with the clutch sleeve and seatable in the recess of the cone arm.

4,620,624

AUTOMATIC CLUTCH CONTROL SYSTEM

Tsutomu Mitsui, Chiryu; Hideyuki Kobayashi, Toyota, and Kouichiro Hirosawa, Kariya, all of Japan, assignors to Aisin Seiki Kabushikikaisha, Aichi, Japan

Filed Mar. 28, 1983, Ser. No. 479,543
Claims priority, application Japan, Mar. 31, 1982, 57-52901
Int. Cl.[4] B60K 41/02
U.S. Cl. 192—0.076 9 Claims

1. An automatic clutch control system for a vehicle of the type having an engine for driving a drive shaft, said engine having a throttle, and said vehicle further comprising a clutch for coupling said drive shaft to a driven shaft, said system comprising:

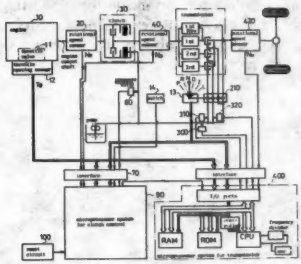
first speed detecting means for detecting a rotational speed of said drive shaft;

second speed detecting means for detecting the rotational speed of said driven shaft;

throttle detecting means for detecting the throttle opening of said engine;

clutch engagement control means for controlling the degree of engagement of said clutch in accordance with a clutch engagement control signal; and

electronic control means coupled to said first and second speed detecting means, said throttle detecting means and said clutch control means, for specifying, with a predetermined time period, a particular group of controlling signal data, which is assigned to a time segment corresponding to



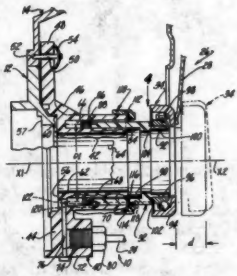
said period for clutch engagement control, in accordance with at least the rotational speed of the driven shaft of the clutch and the throttle opening, and applying successive data in the particular group to the clutch engagement control means at a given subinterval of a divided length of the time segment, said electronic control means, after the specification of a subsequent particular group of controlling signal data, comparing the first data of the subsequent group with the last data of a preceding particular group of controlling signal data and correcting the data assigned to a subsequent time segment.

4,620,625

FLUID ACTUATED CLUTCH ASSEMBLY

Eli M. Ladin, Ann Arbor, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.

Filed Apr. 22, 1982, Ser. No. 370,710
Int. Cl.[4] F16D 23/14, 25/08
U.S. Cl. 192—85 CA 41 Claims



1. In a system for actuating a clutch by axial movement of an actuating member rotatable about a clutch axis via engagement with a clutch release bearing, the improvement comprising a fluid actuated clutch release bearing assembly having a central axis and being adapted to be supported with said central axis generally in line with the clutch axis, said clutch release bearing assembly including a housing member having an annular, axially extending cylinder portion having a cylinder cavity, a generally tubular piston adapted to be received in said cylinder cavity for reciprocation therein generally along said central axis in response to fluid pressure in said cylinder cavity, said

piston having a support ring portion adapted to supportingly receive the clutch release bearing for reciprocable movement with said piston, said clutch release bearing assembly further including alignment means separate from the clutch release bearing and defining a radial clearance for permitting a preselected radial movement of at least a part of said clutch release bearing assembly in response to engagement of the clutch release bearing with the clutch actuating member whereby the axis of rotation of the clutch release bearing can be substantially moved into alignment with the clutch axis, said alignment means including support means for supporting said housing member against a radially extending support surface on a support housing and generally axially retaining said housing member while permitting a preselected limited radial movement.

4,620,626

CLUTCH DRIVEN PLATE ASSEMBLY WITH AN ANTI-RATTLE DAMPER

Thaddeus Lech, Jr., Sterling Heights, and Bruce A. Mullard, Mt. Clemens, both of Mich., assignors to Borg-Warner Automotive, Inc., Troy, Mich.

Filed Jul. 11, 1985, Ser. No. 754,037
Int. Cl.[4] F16D *3/12, 13/38*
U.S. Cl. 192—106.2 **10 Claims**

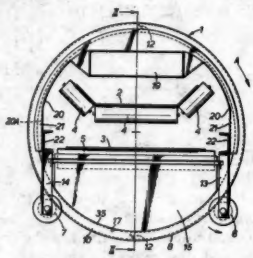
1. A clutch driven plate assembly for an automotive vehicle clutch driving a transmission input shaft, comprising a hub assembly having an inner hub with a barrel splined onto the input shaft and external backlashing splines, and an outer hub having a barrel with internal backlashing splines and an integral radial flange, a clutch plate carrying friction facings at the outer periphery thereof, a spring retainer plate secured to the clutch plate to sandwich said outer hub flange therebetween, said plates and outer hub flange having axially aligned coinciding sets of circumferentially spaced windows therein, and damper springs received in each set of windows, the improvement comprising a cam retainer received on said inner hub to rotate therewith and having a plurality of camming recesses facing said outer hub, and a plurality of plungers yieldably biased in said outer hub barrel such that rotation of said plates, damper springs and outer hub relative to said inner hub and retainer causes said plungers to cam out of said cam retainer recesses.

4,620,627

APPARATUS FOR COLLECTING MATERIAL WHICH BECOMES DISLODGED FROM THE UNDERSIDE OF A CONTINUOUS BELT CONVEYOR

Arthur Griffiths, Warrington, England, assignor to Pilkington Brothers P.L.C., Merseyside, England

Filed Dec. 19, 1983, Ser. No. 562,747
Claims priority, application United Kingdom, Dec. 22, 1982, 8236410
Int. Cl.[4] B65G *37/00*
U.S. Cl. 198—580 **5 Claims**



1. Apparatus for collecting material which becomes dislodged from the underside of the return run of a continuous belt conveyor having an upper carrying run and a lower return run, which apparatus comprises:

an elevator for surrounding a section of the conveyor in the region of a support roller for the return run of the conveyor, which elevator has a channel section in which material dislodged by the influence of the support roller during the return run of the conveyor can be collected and transported to a depositing position above the carrying run of the conveyor;

a chute at the depositing position to guide material onto the carrying run;

wherein the channel section of the elevator is formed of a circumferential base wall and side walls extending radially inwardly therefrom and is divided into troughs by lifting walls extending transversely across the channels at discrete spaced locations therealong, which lifting walls are inclined to the base wall of the channel, and the inclination of the lifting walls is geometrically matched to the inclination and disposition of the chute so that the bulk of the material in each trough is retained until its lifting wall is above the chute, and

returning means for returning material dislodged from the troughs during their upward journey to said chute, said returning means comprising material-return channels depending downwardly from opposite sides of said chute, each said material-return channel including a bottom wall and side walls which overlap outer surfaces of said side walls of said elevator, said bottom wall spaced radially inwardly from radially inner ends of said lifting walls and said side walls of said elevator to define a gap between said bottom wall of said material-return channel and said lifting walls of said elevator through which material may fall and be guided to a lower trough by said bottom wall.

4,620,628

CABLE DRIVE CONVEYOR SYSTEM AND A METHOD FOR CONVEYING ARTICLES IN A CONVEYOR SYSTEM

Fred S. Greenlee, Wichita, Kans., assignor to Great Plains Ventures, Inc., Wichita, Kans.

Filed Oct. 31, 1983, Ser. No. 547,036
Int. Cl.[4] B65G *13/07*
U.S. Cl. 198—790 **23 Claims**

1. A cable drive conveyor system comprising a pair of support members generally equidistantly separated from each

other throughout their lengths while serpentinely traversing a base floor and having at least one curved section and at least one straight section:

support means attached to said pair of support members for supporting and positioning said conveyor system at a desired height from the base floor;

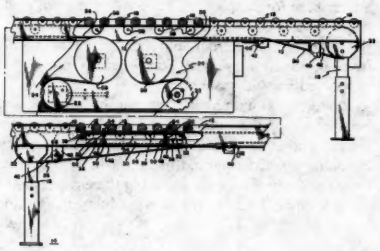
a plurality of carrier rollers rotatably connected to the support members;

a plurality of sheave supports members interconnecting said pair of support members underneath said carrier rollers;

at least one support angle means connected to and supported by said sheave support members, said support angle means having a structure defining a plurality of angle apertures: at least one pressure angle means in contact with and slidably positioned over and against said support angle means; an attachment means interconnecting said support angle means and said pressure angle means within said angle apertures; at least one idler sheave rotatably attached to said pressure angle means; at least one return bracket means attached to a selected sheave support member underneath of said selected support angles; at least one return sheave rotatably connected to said return bracket means;

means for vertically urging the pressure angle means away from said support angle means while said attachment means within said angle apertures slidably holds the pressure angle means and support angle means together;

at least one inside curve idler pulley bracket assembly means



including an inside idler pulley bracket means secured to one of the support members, an inside idler plate means pivotally connected to said inside idler pulley bracket means at an inside pivotation point, a plurality of inside idler sheaves rotatably connected to said inside idler plate means, a plurality of inside return sheaves rotatably secured to the inside idler pulley bracket means underneath said inside idler sheaves of said inside idler plate means, means for vertically urging said inside idler plate means away from said inside idler pulley bracket means;

a conveyor cable drive means mechanically communicating with the conveyor system;

an endless cable being driven by said drive means and being trained over and carried by said idler sheaves, said return sheaves, said inside idler sheaves and by said inside return sheaves;

at least one cable connection means connecting two ends of said endless cable;

a start pad covering the at least one cable connection means and having predetermined characteristics distinct with respect of said endless cable;

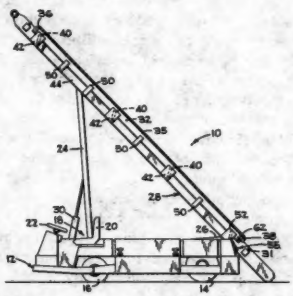
said means for vertically urging the pressure angle means away from the support angle means and said means for vertically urging said inside idler plate means away from said inside idler pulley bracket means both cause said endless cable to generally maintain a constant pressure against the carrier rollers, excepting when said start pad which covers said cable connection means is carried by said idler sheaves and said inside idler sheaves.

4,620,629

SIDE GUIDE FOR AIRCRAFT BELT LOADER

William C. Dean, Orange, Fla., assignor to FMC Corporation, Chicago, Ill.

Filed Mar. 4, 1985, Ser. No. 707,634
Int. Cl.[4] B65G *21/20*
U.S. Cl. 198—836 3 Claims



1. A side guide for an aircraft belt loader having a conveyor with a frame, the improvement comprising:

a guide rail positioned adjacent to, and extending substantially the length of said frame;

said guide rail including a vertical wall member and a flange formed along the upper edge thereof, said flange extending transverse to wall member and away from said frame;

a plurality of links, each pivoted at one end to said wall member and at the other end pivotally supported on said frame;

a bell crank pivotally supported on said frame and including a link arm pivotally attached to said wall member and a control lever for manual rotation of said bell crank between a lowered position in which said flange is positioned below said frame and an elevated position in which said flange is positioned above said frame; and

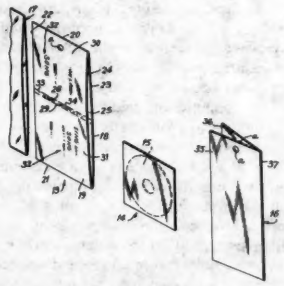
said wall member has a vertical height sufficient to position the lower edge of said wall member below said frame when in said elevated position.

4,620,630

COMPACT DISC IN CONVERTIBLE ENCLOSURE

Ira L. Moss, 176 Beach 146th St., Neponset, Queens, N.Y. 11694

Filed Oct. 18, 1985, Ser. No. 788,932
Int. Cl.[4] B65D *85/57*
U.S. Cl. 206—45.24 4 Claims



1. As a new article of manufacture a compact disc and convertible display and storage enclosure therefore comprising in

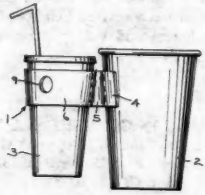
combination an outer envelope including elongate front and rear rectangular panels, a lengthwise dimension of said panels being at least twice the diameter of said disc, said panels having short upper and lower end edges and elongate side edges, said end edges and one of said side edges being mutually connected, the other said side edges defining therebetween an open-mouth portion, upper and lower transversely directed parallel hinge lines formed in said panels, said hinge lines lying parallel to said end edges and being disposed in proximate relation to and at opposite sides of a line extending between and bisecting said side edges, a compact disc member disposed within said envelope in the area between said lower end edges of said panels and said lower hinge line, a stiffener member comprising first and second rectangular panels connected at a central longitudinally directed fold line, said first and second panels being nested within said envelope and encompassing said disc member with said fold line of said stiffener member in substantial registry with said mouth portion, and a removable film member encompassing and sealing said envelope to thereby retain said stiffener member and hence said disc in said envelope, said envelope after removal of said film and stiffener member being foldable about said hinge lines to thereby shift surfaces of a said panel into juxtaposed condition thereby to define a compact storage container for said disc.

4,620,631

DEVICE FOR HOLDING CONTAINERS

Thomas P. Bartelt, 6410 Upper Parkway North, Wauwatosa, Wis. 53213

Filed Jun. 10, 1985, Ser. No. 743,301
Int. Cl.[4] B65D *3/28, 23/12*
U.S. Cl. 206—217 **4 Claims**



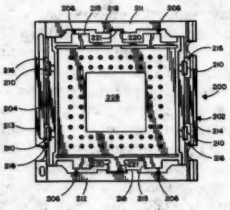
1. A device for holding two products, comprising a first container to contain a product, a strip of flexible material having a pair of end sections extending circumferentially of said first container and secured to the outer surface of said first container, said strip also including a loop section and a pair of first reverse bends connecting said end sections to the respective ends of the loop section, said loop section being foldable against the container to a folded storage position, in said folded position said loop section comprising a pair of inner portions disposed flatwise against the respective end sections and said loop section also comprising an outer portion disposed flatwise against said inner portions, the ends of said outer portions being connected to said inner portions by second reverse bends, pulling outwardly on said outer portion causing said loop section to be moved from said folded position to a generally circular condition to receive a second container, said loop when in the circular condition being spaced from said first container by said first reverse bends so that said second container is spaced outwardly of said first container.

4,620,632

CARRIERS FOR PIN GRID ARRAY

James C. Alemanni, 3917 Sherbourne Dr., Oceanside, Calif. 92056

Continuation-in-part of Ser. No. 684,847, Dec. 21, 1984, Pat. No. 4,549,651. This application Oct. 25, 1985, Ser. No. 791,216
The portion of the term of this patent subsequent to Oct. 29, 2002, has been disclaimed.
Int. Cl.[4] B65D *73/02*
U.S. Cl. 206—329 **21 Claims**



1. A one-part carrier for a pin grid array having a body with a plurality of pins projecting from at least one face thereof, said carrier comprising:

an outer frame having side walls extending around the perimeter of an open space within said frame;

a carrier base for supporting the body of the pin grid array, said carrier base integrally connected to said frame inside the open space thereof and having an array of holes through which the pins project when the pin grid array is supported on said base; and

flexible retention fingers having means for engaging the body of a supported pin grid array for releasably retaining the pin grid array on said base, said retention fingers being bendable against their normal bias in a direction away from said carrier base for releasing the engagement of said pin grid array body to remove the body from said base.

4,620,633

PROTECTIVE ENVELOPE DEVICE FOR PACKAGING FRAGILE ARTICLES

Theodore W. Lookholder, 1262 Barrington, #304, Los Angeles, Calif. 90025

Filed Sep. 30, 1985, Ser. No. 781,759
Int. Cl.[4] B65D *81/20*
U.S. Cl. 206—523 **16 Claims**

1. A unitary protective envelope device for packaging fragile articles, comprising:

an envelope adapted to sealably enclose such articles and having an outer wall and a conformable inner wall, said walls defining an expandable cavity therebetween; and

a mass of compressed resilient material contained in said cavity and held in compressed condition under vacuum, said mass of material being adapted upon exposure to atmospheric pressure to expand to an impact-absorbing state, and thereby to force said inner wall into embracing conformity with said articles.

4,620,634

SORTING DEVICE

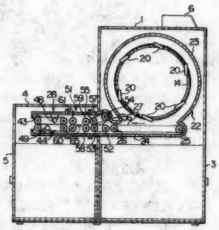
Kiyoaki Takiguchi, Yokohama, Japan, assignor to Computer Services Corporation, Tokyo, Japan

Filed May 4, 1983, Ser. No. 491,580

Claims priority, application Japan, May 25, 1982, 57-88639; May 29, 1982, 57-91565; Jun. 4, 1982, 57-95968; Aug. 20, 1982, 57-144072; Aug. 24, 1982, 57-146427; Oct. 30, 1982, 57-191228; Dec. 3, 1982, 57-212478; Dec. 20, 1982, 57-223596

Int. Cl.[4] B07C *3/04, 5/00*

U.S. Cl. 209—44.3 4 Claims



2. A device for sorting out a multiplicity of pieces according to their size, comprising:

a frame;

a drum rotatably mounted in said frame for storing therein pieces having different sizes to be sorted out;

first means on said drum including openings of different dimensions for passing therethrough pieces of different sizes, respectively;

second means disposed peripherally around said drum in radial alignment with those openings of one dimension for collecting pieces of a particular size passing through said last-mentioned openings;

third means for rotating said drum about its own axis to cause the pieces of the particular size to be discharged through said openings of said one dimension out of said drum;

fourth means for reading information recorded on surfaces of the pieces collected by said second means and fed therefrom along a path; and

fifth means for frictionally separating superimposed pieces from each other before they are supplied to said fourth means, said fifth means comprising a pair of rollers, a second pair of rollers spaced from said first pair of rollers and closer to said fourth means than said first pair of rollers, a first rubber tube fitted over one of said first pair of rollers and held against the other of said first pair of rollers for sandwiching the superimposed pieces between said first rubber tube and the other of said first pair of rollers, a second rubber tube fitted over one of said second pair of rollers and held against the other of said second pair of rollers, a slide plate positioned between said first and second pairs of rollers for guiding the superimposed pieces thereover toward said second pair of rollers, a first motor for rotating one of said first pair of rollers about its own axis at a first speed, a second motor for rotating one of said second pair of rollers about its own axis at a second speed greater than said first speed and a pair of endless belts converging toward each other in a direction toward said first pair of rollers for guiding therebetween the superimposed pieces toward said first pair of rollers, whereby one of the superimposed pieces can be separated from the other when engaged between said second pair of rollers.

4,620,635

SUPPORT STRUCTURE FOR VERTICAL FILING SYSTEMS

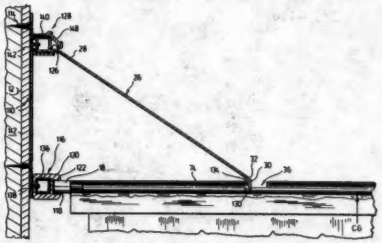
Joseph E. D. M. Morand, Montreal, Canada, assignor to Norman Wade Company Limited, Scarborough, Canada

Filed Sep. 28, 1982, Ser. No. 425,959

The portion of the term of this patent subsequent to Mar. 12, 2002, has been disclaimed.

Int. Cl.[4] A47F *7/16*

U.S. Cl. 211—47 7 Claims



1. A support structure in combination with an elongate, rigid clamping device to grasp sheet material along an edge thereof,

the support structure detachably suspending the clamping device in a substantially horizontal position with sheet material grasped in the clamping device to hand downward from the clamping device,

the support structure permitting coupling and uncoupling of the clamping device therewith,

the support structure comprising:

end support means fixedly secured to said support structure to removably receive a first end of the clamping device; and

elongate suspension means with a first end thereof coupled to said support above said end support means and with a second end thereof adapted to be detachably coupled to said clamping device spaced from said first end,

said suspension means having a length that with a first end of the clamping device received in the end support means and the second end of the suspension means coupled to the clamping device, the clamping device is suspended substantially horizontally,

said end support means receiving the first end of the clamping device to permit at least marginal pivoting of the clamping device relative to the end support means about a horizontal axis normal to the longitudinal of the clamping device passing proximate the first end of the clamping device whereby with said first end of the clamping device received in said end support means, the clamping device may be marginally pivoted about said horizontal axis moving a second end of the binder upward from said horizontal position to permit coupling and uncoupling of said second end of the elongate suspension means with said binder,

the clamping device comprising:

first and second elongate clamping members each having a first longitudinal edge and a second longitudinal edge,

the members hinged together along their first edges to rotate relative to one another about a longitudinal axis to receive and grasp sheet material between second edges thereof,

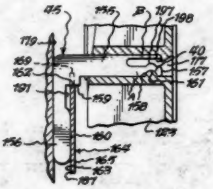
said end support means receiving said first end of the clamping device and said second end of the elongate suspension means coupling to the clamping device so as to permit pivoting of the clamping device about said longitudinal axis,

4,620,636

OFFICE ACCESSORY SYSTEM FOR USE ON BOTH HORIZONTAL AND VERTICAL SURFACES

Francis V. Herr, Kenmore; Thomas B. Walklet, Williamsville, both of N.Y.; James G. Hansen, Winnetka; Theodore J. Hasler, Chicago, both of Ill.; Valentin Beil, East Aurora; Harold E. Donlon, Grand Island, both of N.Y., and Ken E. Christian, Harrietsville, Canada, assignors to McDonald Products Corporation, Buffalo, N.Y.

Division of Ser. No. 295,259, Aug. 24, 1981, Pat. No. 4,478,339.
This application Jun. 8, 1984, Ser. No. 618,836
Int. Cl.[4] A47F *3/14*
U.S. Cl. 211—126 **25 Claims**



1. An accessory system supportable from a vertical surface provided with bracket receiving means, said system comprising an office accessory designed for use on both horizontal and vertical surfaces and in first and second positions of orientation, said accessory being self-supporting in said first position on horizontal surfaces and including means defining a pair of spaced recesses opening to one side of said accessory, and means for selectively mounting said accessory in said second position on a vertical surface, said mounting means including a cantilever support having an attaching bracket adapted to interfit with the bracket receiving means in the vertical surface and be thereby supported from the vertical surface, an arm having a free end extending for a substantial distance laterally from said attaching bracket, and means for releasably securing said accessory to said arm so that when said attaching bracket is supported from the vertical surface with said arm extending from said attaching bracket in a cantilever fashion and said accessory is releasably secured to said arm, said accessory is supported from the vertical surface, said means for releasably securing including means cooperable between the defined recesses of said accessory and said arm to support said accessory from the vertical surface as aforesaid, said means cooperable between said recesses and said arm including a pair of support hooks each having a portion which is releasably securable within a corresponding recess so that the hooks project from said accessory in laterally spaced relation, said arm having an upper edge with laterally spaced detents therein, said hooks engageable with said detents for suspending said accessory in front of said arm.

4,620,637

TROLLEY

Masashi Karashima, 88-5, Nakano, Ebina-shi, Kanagawa-ken, Japan

Filed Sep. 9, 1985, Ser. No. 774,230
Int. Cl.[4] A47F *5/16*
U.S. Cl. 211—188 **1 Claim**

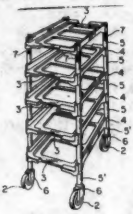
1. A trolley comprising:

four metal support pipes which are arranged at the four corners of a quadrilateral and which have casters mounted on the lower ends thereof;

a plurality of rack boards of a synthetic resin provided with pipe cover portions at four corners thereof which are threaded over said metal support pipes;

spacer pipes of a synthetic resin inserted between said pipe cover portions of vertically-adjacent rack boards;

fastening members which are fitted into the upper ends of said support pipes for the purpose of fastening the uppermost of said rack boards; and



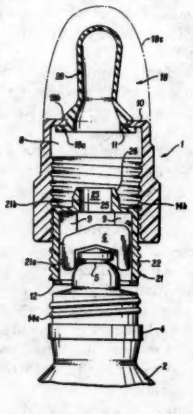
tubular cushion materials which can freely expand and contract and which are inserted between said pipe cover portions of said uppermost rack board and the uppermost of said spacer pipes.

4,620,638

CAP FOR OPENING AND EXTRACTING THE CONTENTS OF A VESSEL

Manfred Schmidt, Rosbach, Fed. Rep. of Germany, assignor to Milupa Aktiengesellschaft, Friedrichsdorf, Fed. Rep. of Germany

Filed Oct. 3, 1984, Ser. No. 657,198
Claims priority, application Fed. Rep. of Germany, Oct. 7, 1983, 3336612
Int. Cl.[4] B65D *1/02*
U.S. Cl. 215—11 R **13 Claims**



1. A cap for opening and extracting the contents of a vessel provided with a neck and an extraction end closed by a removable attachment connected to the vessel neck by a weakened zone, and wherein the cap includes an open end for engagement over the vessel neck, which cap comprises:

(a) means disposed internally of the cap for engaging the attachment whereby rotation of the cap relative to the vessel neck causes the attachment to be separated from the vessel neck at the weakened zone and thereby open the vessel;

(b) an extraction opening through which the contents of the vessel may be removed after separation of the attachment from the vessel neck;

(c) means for detachably securing the cap onto the vessel neck; and

(d) means for forming a seal with the vessel neck, wherein rotation of the cap to separate the attachment from the

vessel and thereby open the vessel also forms said seal and forms a continuous path from the interior of the vessel to outside the cap through the extraction opening in the cap.

4,620,639

SYNTHETIC RESIN THIN-WALLED BOTTLE

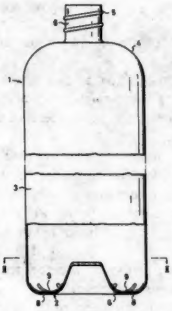
Yataro Yoshino, Tokyo, Japan, assignor to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 89,537, Oct. 29, 1979, abandoned. This application Apr. 26, 1983, Ser. No. 472,997

Claims priority, application Japan, Nov. 7, 1978, 53-137419; Nov. 24, 1978, 53-145690; Nov. 24, 1978, 53-145689; Dec. 4, 1978, 53-149871; Dec. 11, 1978, 53-153313; Dec. 18, 1978, 53-158253

Int. Cl.[4] B65D *1/02*

U.S. Cl. 215—1 C **24 Claims**



1. A biaxially oriented synthetic resin thin-walled bottle, made by blow molding an injection molded intermediate, comprising a neck portion defining an opening, a hollow cylindrical barrel body portion interconnecting said neck portion and a bottom portion, said bottom portion having a central part bulged inwardly to form a frusto-conical raised portion and an annular ground contacting wall surrounding said raised portion and connecting with said barrel body portion, wherein:

the inner surface of said annular ground contacting wall is provided with a plurality of inwardly projecting rigid ribs so that said bottom portion at the positions of said rigid ribs is thicker than the remainder of the bottom portion, said outer surface of said bottom portion being uniformly smooth and continuous at the locations of said internal rigid ribs;

said rigid ribs being formed integrally with said bottom portion during the blow molding of said injection molded intermediate having a plurality of ridges provided on its internal surface which correspond to said rigid internal ribs of said biaxially oriented bottle, said rigid internal ribs being the result of the expansion of said ridges of said intermediate during biaxial orientation only.

4,620,640

LINED CHILD-RESISTANT CLOSURE FOR WIDEMOUTH LIQUID CONTAINER

Peter T. Swartzbaugh, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 16, 1985, Ser. No. 809,607

Int. Cl.[4] B65D *55/02*

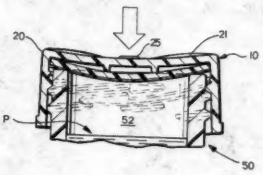
U.S. Cl. 215—217 **21 Claims**

1. A child-resistant package comprising, in combination:

a container having a central axis and comprising an open mouth and a finish surrounding said open mouth, said finish of said container comprising:

a plurality of container thread segments, each of said plurality of container thread segments being formed integrally with said finish and projecting radially outwardly therefrom, each of said plurality of container thread segments further having a top side and an underside and extending generally longitudinally in an arc extending around said finish, said arc having a radius along said central axis of said container, the total of the arcuate extents of said plurality of container thread segments being less than 360°, whereby said plurality of container thread segments define a plurality of unthreaded finish portions extending generally circumferentially around said finish, each of said unthreaded finish portions being disposed between the adjacent ends of a pair of adjacent container thread segments of said plurality of container thread segments, the longitudinal extent of each of said plurality of container thread segments extending at a helical angle with respect to said central axis of said container, each of said plurality of container thread segments having a generally vertically extending shoulder that extends from the underside thereof; and

a plurality of projections, each of said plurality of projections being formed integrally with said finish and projecting radially outwardly therefrom, each of said plurality of projections extending generally longitudinally in an arc extending around said finish, said arc having a radius along said central axis, the longitudinal extent of each of said plurality of projections extending at a helical angle with respect to said central axis of said container, the total of the arcuate extents of said plurality being less than 360° whereby said plurality of projections define a plurality of gaps between said projections, each of said gaps being disposed between the adjacent ends of an adjacent pair of said plurality of projections, said plurality of projections



being disposed further from said open mouth of said container than said plurality of container thread segments and defining, with said plurality of container thread segments, a plurality of generally helically extending slots; and

a closure having a central axis, said closure comprising;

a top panel removably spanning said open mouth of said container;

an annular skirt attached to and extending generally normally from said top panel, said annular skirt surrounding said finish portion of said container;

a plurality of closure thread segments, each of said plurality of closure thread segments being formed integrally with said annular skirt and projecting radially inwardly therefrom, each of said plurality of closure thread segments further having a top side and an underside and extending generally longitudinally in an arc extending around said annular skirt, each of said plurality of closure thread segments having a generally vertically extending shoulder that extends from said top side of said each of said plurality of closure thread segments, said plurality of closure thread segments being engageable with at least one of said plurality of generally helically extending slots to permit movement of said closure in a helical pattern with respect to said finish of said container, said movement of said closure with respect to said container being effective to permit said closure to be applied to said container and removed from said container, said movement of said closure with respect to said container during the removal of said closure from said container being effective to bring at least one of the vertically extending shoulders of said plurality of container thread segments into interfering

contact with at least one of the vertically extending shoulders of said plurality of closure thread segments to prevent the removal of said closure from container, at least a portion of said closure being displaceable with respect to said finish to move said at least one of said vertically extending shoulders of said plurality of closure thread segments out of interfering contact with said at least one of said vertically extending shoulders of said plurality of container thread segments to permit further movement of said closure with respect to said container in a helical direction until said closure can be removed from said container; and

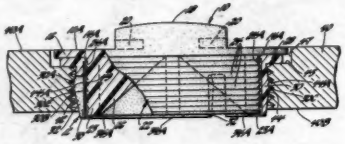
biasing means resiliently biasing said closure with respect to said container to resiliently prevent the displacement of said at least said portion of said closure with respect to said container.

4,620,641

ACCESS PLUG FOR THREADED HOLES IN ELECTRIC STARTING APPARATUS

Arthur G. Beer, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 12, 1985, Ser. No. 808,080
Int. Cl.[4] B65D *41/04*
U.S. Cl. 220—288 5 Claims



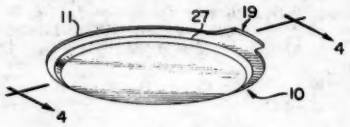
1. An access plug for providing a removable closure for a threaded hole that is formed in a metallic housing wherein the plug has a portion that is adapted to be axially moved into the threaded hole when the plug is assembled to the hole comprising, a one-piece plastic part having a cap member and a cap retainer member, said cap member having an axially extending tubular portion the outer surface of which is defined by a plurality of annular axially spaced ratchet shaped teeth, said cap retainer member having an annular portion and a plurality of arcuately extending prongs that are joined to said annular portion and which extend axially therefrom, said prongs being radially deflectable, said cap member and retainer member being axially spaced from each other and being joined by a thin annular frangible portion that is connected to said annular portion of said retainer member and one end of said tubular portion of said cap member, said frangible portion being broken when an axial force is applied to said cap member to insert the retainer member in said hole whereby the cap member and retainer member are separated and said tubular portion of said cap member is forced into the interior of said prongs, said retainer member having a radially inwardly extending annular bead that is formed from a portion of said frangible portion when it is broken, the inner diameter of said bead and the outer diameter of said ratchet teeth being such that said ratchet teeth slide over said bead when said tubular portion is inserted into said prongs and such that a ratchet tooth engages said bead to secure said cap member to said retainer member, said ratchet teeth engaging internal surfaces of said prongs to deflect said prongs radially outwardly into tight engagement with the threaded portion of said hole.

4,620,642

RESILIENT PLUG CLOSURE

Keith J. Wertz, 2533 S. Deegan Dr., Santa Ana, Calif. 92704, and Emmett Graham, 9101 N. 60th St., Paradise Valley, Ariz. 85253

Filed Mar. 20, 1984, Ser. No. 714,004
Int. Cl.[4] B65D *39/00*
U.S. Cl. 220—307 11 Claims



1. A reusable lid for a paint can container having a grooved top rim comprising:

a planar outer rim of a size to extend across and to close the grooved rim of the paint can container, spaced radially inward from the outer rim is a recessed substantially circular inner edge;

annular sealing means extending downwardly from said circular inner edge for engaging the inside of the top rim of the container includes a substantially cross-sectional sinusoid outer radial configuration for providing a continuous sealing surface with the inside of the top rim of the container; and

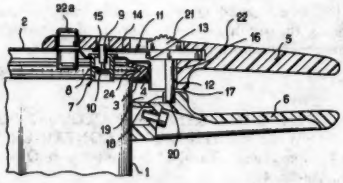
a planar bottom portion connected to the annular sealing means, the planar outer rim lying in a plane substantially tangential to the curved end of the sinusoid sealing configuration whereby any paint that accumulates in the grooved top rim of the paint can container will not be displaced and splattered by the sealing of the paint can container with the reusable lid.

4,620,643

SAFETY DEVICE FOR OPENING AND CLOSING A PRESSURE-COOKING APPLIANCE WITHOUT DANGER

Christian Sebillotte, Selongey, France, assignor to SEB S.A., Selongey, France

PCT No. PCT/FR85/00027, § 371 Date Oct. 29, 1985, § 102(e) Date Oct. 29, 1985, PCT Pub. No. WO85/03851, PCT Pub. Date Sep. 12, 1985
PCT Filed Feb. 15, 1985, Ser. No. 800,635
Claims priority, application France, Feb. 29, 1984, 84 03153
Int. Cl.[4] B65D *45/00*
U.S. Cl. 220—316 6 Claims



1. A safety device for opening and closing a pressure-cooking appliance comprising a pressure vessel (1) on which is mounted a lid (2), the rim of said lid and the rim of said vessel being provided with locking ramps (3, 4) which are intended to engage one beneath the other and to lock the lid in position on the vessel by rotational displacement, said lid (2) and said vessel (1) being each provided with a handle (5, 6), the lid being provided with an opening (8) which communicates with the interior of the pressure vessel (1) and in which is mounted

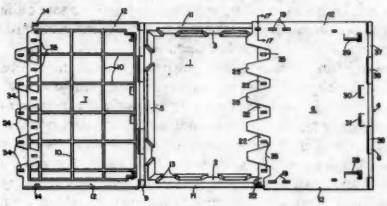
a stem (9) fitted with a valve head having the function of closing said opening when the pressure within the vessel (1) attains a predetermined value, said device comprising associated means adapted to cooperate with the stem (9) of the valve (10) of the lid (2) in order to prevent closure of the valve (10) as long as the two handles (5, 6) are not in the closed position and in order to prevent opening of the lid (2) when the two handles (5, 6) are in the locking position as long as the valve (10) is in the closed position, wherein said associated means comprise a locking member (11) slidably mounted in the handle (5) and adapted to carry a push-rod (16), said locking member (11) being constituted by a portion (14) which extends to a point located above the valve stem (9) and which is provided with a hole (15), wherein a locking ramp (18) formed on the pressure vessel handle (6) is adapted to cooperate with the push-rod (16) of the locking member in order to thrust said push-rod into a position such that the valve stem (9) is permitted to engage in the hole (15) of said locking member extension (14) when the two handles (5, 6) are in the fully closed position and locked together by the push-rod (16) of said locking member (11).

4,620,644

TOTE BOX WITH LID CONTAINER

Daniel A. Miller, Cincinnati, Ohio, assignor to Buckhorn Material Handling Group Inc., Milford, Ohio

Filed Mar. 27, 1981, Ser. No. 248,270
Int. Cl.[4] B65D *43/14, 21/02, 51/04*
U.S. Cl. 220—334 **23 Claims**



1. A tote box, comprising:

a bottom of generally rectangular shape around its periphery;

opposed side and opposed end walls sloping downwardly and inwardly to said bottom, each wall having lower ends integrally formed with the periphery of said bottom and side ends integrally formed with each other to form with the bottom a unitary container having an open top;

two cover elements closing the open top of said container in closed position;

hinge means along the uppermost edge of each of said end walls and along one edge of each of said cover elements for respectively hingedly securing said each cover element to said container for pivotal movement about respective axes from said closed position through about 270 degrees to an open position;

the uppermost edge of said side walls having an integral flange with an outermost downwardly facing lock surface;

each of said cover elements being generally rectangular with opposed end portions, one of which having said hinge means, and opposed side portions

overlying said container flange for supporting said cover element in said closed position;

each of said side portions of one of said cover elements at a location adjacent its end portion that is opposite its hinge means having a downwardly extending unitary hook means resiliently movable between a lock position extending beneath said flange lock surface to prevent movement of said cover elements from said closed position toward said open position and an unlocked position outwardly spaced from said flange to permit pivotal movement of said cover elements from said closed position toward said open position; said hook means being inherently biased from said unlocked position to said lock position;

each said hook means having a horizontally extending upwardly facing lock surface underlying said flange lock surface in said lock position, and an immediately adjacent lower downwardly and outwardly extending cam surface means that will engage the adjacent outermost edge of said flange when said cover element is moved about said hinge means into its closed position to thereby cam said hook means from its lock position to its unlocked position against said bias to correspondingly move outwardly of and past said flange as said cover element moves into its closed position, so that said hook means thereafter resiliently moves from its unlocked position to its lock position when said cover element is in its closed position to lock said cover element;

said cover elements overlapping in the region of the middle of said box top, in their closed positions and the end portions of said cover elements within the vicinity of said overlap having complementary raised and depressed areas, the depressed areas being about one-half the length of the raised areas, said areas interfitting with each other when said cover elements are closed, to present an upwardly facing flat surface, inset with respect to the upper edges of said side and end walls, whereby a like box may be stacked thereon and may be confined against lateral movement;

wherein at least some of the interfitting raised and depressed areas have mechanically interlocking means interlocking by cover element movement immediately prior to attaining said first position during closing of the cover elements, which movement is substantially perpendicular to said flat surface;

said mechanically interlocking means positively preventing relative movement of said cover elements within the plane of said flat surface away from each other in the direction perpendicular to said hinge means axes;

at least one of said mechanically interlocking means and said interfitting areas positively preventing relative movement between said cover element in the plane of said surface toward each other in the direction perpendicular to said hinge axes; and

the other of said cover elements on each of its side portions having, at a location adjacent its end portion that is opposite its hinge means and adjacent the respective hook means of said one cover element, an aperture aligned with an aperture in said container flange providing means receiving a security element preventing movement thereat between said one cover element and said container so that said interfitting areas will thereby prevent horizontal movement thereat between said other cover element and said container to prevent disengagement of said hook means when the security element is present.

4,620,645

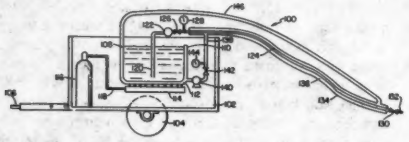
PORTABLE ASPHALT MELTING AND DISPENSING APPARATUS

Jordan C. Hale, NE. Albuquerque, N. Mex., assignor to Aeroil Products Company, Inc., South Hackensack, N.J.

Filed Mar. 26, 1984, Ser. No. 593,618
Int. Cl.[4] B67D *5/62*
U.S. Cl. 222—146.2 **30 Claims**

20. A portable asphalt melting and dispensing apparatus, said apparatus comprising storage means for storing asphalt in a heated, fluid condition, an outer shell at least partially surrounding said storage means to provide a first heating region, a flexible hose of deformable material having an inlet arranged in fluid communication with said asphalt within said storage means and an outlet for controlling the discharge of said asphalt therefrom, a flexible outer shell concentrically surrounding said flexible hose to provide an annular heating chamber

extending between said inlet and said outlet thereof, a heating medium provided within said first heating region and said annular heating chamber, said heating medium in contact with the outer surface of said flexible hose within said annular heating chamber, circulating means for circulating said heating



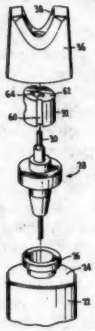
medium within said first heating region and said annular heating chamber whereby said asphalt is maintained in said heated fluid condition while within said flexible hose, supplying means for supplying said asphalt in said heated fluid condition from said storage means to said flexible hose for discharge through said outlet thereof.

4,620,646

PUMP BUTTON AND OVERCAP ASSEMBLY, AND METHOD OF ASSEMBLY OF THE OVERCAP AND PUMP BUTTON ON A PUMP DISPENSER CONTAINER

James R. Crapser, Racine County, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Jun. 28, 1985, Ser. No. 749,852
Int. Cl.[4] B67D *5/32*
U.S. Cl. 222—153 **13 Claims**



1. A method of assembling a pump button and an overcap with a container having a pump including a dispensing tube, said method comprising the steps of providing a dispensing pump button having at least one axial guide and an overcap having a bore for receiving the pump button, and at least one key member receivable in said guide channel and projecting into said bore, assembling said pump button on said dispensing tube, then telescoping said overcap onto said pump button and into position on said container with said key member radially resiliently engaging said pump button to retain said pump button on a pump assembly, said pump button being moved by said overcap to a depressed inoperative position.

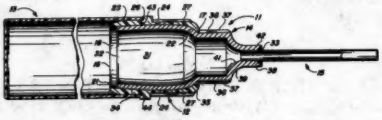
4. An overcap and pump button assembly comprising an overcap being equipped with a bore and a pump button, said overcap including an outer shell having an open end for receiving and forming an interlock with a shouldered container, and a guide sleeve within said outer shell, said pump button having a tubular body having formed therein at least one axial guide channel, said guide sleeve defining a base of a diameter of freely receive said pump button and including a radially inwardly projecting key member for reception in said guide channel; the relative diameters of said tubular body and said bore, the radial extent of said key member, and the resiliencies of said guide sleeve and said tubular body being such that when said key member and said guide channel are misaligned said pump button is forcibly engageable into said guide sleeve with said key member engaging said pump button body in radial compressed relation sufficient to retain said pump button in said guide sleeve in a depressed, inoperative position while permitting manual rotation of said pump button within said guide sleeve to align said guide channel with said key member.

4,620,647

LUBRICATING LIQUID DISPENSER

John L. Woodworth, Hopkinton, and John M. Lynch, Paxton, both of Mass., assignors to Kidde, Inc., Saddle Brook, N.J.

Filed Aug. 26, 1985, Ser. No. 769,497
Int. Cl.[4] B65D *37/00*
U.S. Cl. 222—215 **14 Claims**



1. A liquid dispenser comprising:

a hollow plastic adapter defining a cavity extending between axially aligned open ends thereof; said cavity having a uniform cylindrical portion terminating at one of said open ends and an adjoining portion joined to said cylindrical portion and projecting radially inwardly toward and terminating at said other open end;

a hollow metal hub defining a passage extending between axially aligned open ends thereof; said hub having a first cylindrical outer surface portion with a given diameter slightly greater than said uniform cylindrical portion and press fit therein, a second cylindrical outer surface portion with a predetermined diameter less than said given diameter and projecting out of said other open end of said adapter, and a connecting outer surface portion joining said first and second cylindrical surface portions and engaging said adjoining portion of said adapter;

an elongated metal tubular spout projecting from one end of said hub and defining a liquid discharge path communicating with said passage; and

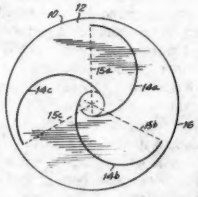
a plastic container bonded to said one end of said adapter and defining a liquid filled volume communicating with said passage.

4,620,648

PRESSURE-RESPONSIVE VALVE

Gilbert Schwartzman, Westchester, N.Y., assignor to Dab-O-Matic Corp., Mt. Vernon, N.Y.

Continuation-in-part of Ser. No. 395,111, Jul. 6, 1982, abandoned. This application Mar. 2, 1984, Ser. No. 585,754
Int. Cl.[4] B65D *25/38, 35/32;* F16K *15/14*
U.S. Cl. 222—490 **14 Claims**



1. A pressure-responsive valve for controlling the flow of a fluid, said valve comprising an elastically deformable dia-

phragm having a plurality of non-intersecting, non-meeting, separate arcuate slits, each slit having a base which is intersected by at least one other slit, and each slit being out of intersecting relation with its own base.

4,620,649

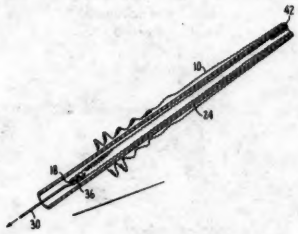
DEVICE FOR TURNING FABRIC SLEEVES

Donell I. Graham, 2415 Glory C Rd., Medford, Oreg. 97501

Filed Mar. 11, 1985, Ser. No. 710,582

Int. Cl.[4] A41H *43/00*

U.S. Cl. 223—40 **1 Claim**



1. A device for turning a tubular fabric sleeve having an interior opening closed at one end, said device comprising:

(a) a hollow member insertable into the interior opening of the fabric sleeve, said member having a plane-defining surface,

(b) a second member insertable into said hollow member having means for engaging the fabric sleeve and movable to pull the fabric sleeve past the plane-defining surface interiorly of the hollow member,

(c) said means comprising a metallic wire having a pointed end for piercing said fabric sleeve and a plurality of helical turns formed adjacent said free end thereof wherein the last of said turns is set substantially 90 degrees to the centerline of the wire so as to form a definite ledge for the fabric sleeve to bear against during the turning of the fabric.

4,620,650

METHOD AND APPARATUS FOR AUTOMATICALLY POSITIONING TUBULAR PANTYHOSE LEGS

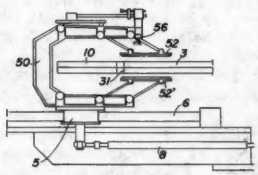
Vinicio Gazzarrini, Florence, Italy, assignor to Solis S.r.l., Italy

Filed Oct. 11, 1985, Ser. No. 786,943

Claims priority, application European Pat. Off., Jul. 25, 1985, 85830193.0

Int. Cl.[4] A41H *43/00*

U.S. Cl. 223—43 **14 Claims**



1. A method of automatically positioning tubular legs of a pantyhose which are on two suction everter tubes in an everted condition, the tubes each having side fingers and the legs each having a detection point and toe ends, comprising the steps of:

(a) positioning a carriage in a predetermined position relative to the tubes, over the legs and spaced from the toe ends thereof, the carriage having two pairs of grippers which are closable to engage the legs and to cooperate with the side fingers to move the legs with movement of the carriage, the carriage being reciprocately movable in a direction parallel to the tubes, the carriage being at the predetermined position with its grippers open;

(b) partially closing the grippers to move them close to the legs without touching the legs, the carriage having a sensor probe for each pair of grippers for sensing the detection point of each leg;

(c) moving the carriage with the grippers partially closed along the legs for causing the sensor probes to detect an initial position for the detection point of each leg;

(d) fully closing each of the pair of grippers separately when its sensor probe has detected the initial position of the detection point on its respective leg, in order to engage the respective leg and commence its movement along its tube with movement of the carriage;

(e) continuing to move the carriage with the grippers closed for moving the legs from their initial position to a final sewing position, the toe ends of the legs being moved toward ends of the tubes, said final positions corresponding to a stroke end position for the carriage;

(f) holding the carriage stationary and its stroke end position while maintaining the grippers closed on the legs; and

(g) opening the pairs of grippers before moving the tubes with the legs at their final position away from the carriage.

4,620,651

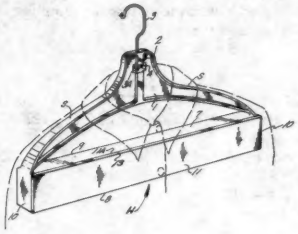
CLOTHES HANGER WITH CONCEALABLE STORAGE COMPARTMENT

Mary A. Spies, 205 S. 54th, Space 54, Springfield, Oreg. 97478

Filed Nov. 9, 1983, Ser. No. 549,885

Int. Cl.[4] A47G *25/16, 25/28*

U.S. Cl. 223—88 **3 Claims**



1. A clothes hanger additionally serving to store in a concealed manner small valuables and comprising,

an arch portion including a neck,

a hook centrally carried by the neck of the arch portion,

a horizontal housing having a multitude of fixed walls and carried by arch portion extremities and being of elongate configuration and integral at its ends with the extremities of said arch portion, said housing defining a storage area substantially coextensive with said arch portion for the reception of small valuables, said housing including closure means movably mounted on one of said fixed walls and being of planar configuration and coextensive with said fixed walls so as to resemble a fixed wall of the housing, and

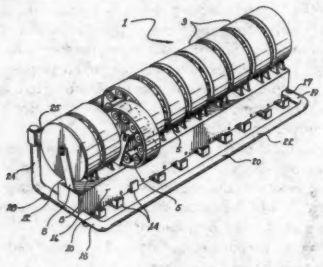
said housing being of a horizontal transverse dimension Y and varies only slightly from the greatest transverse dimension X of the extremities of said arch portion whereby said housing will cause a garment and hanger combination to have the typical appearance of a garment in place on a conventional clothes hanger.

4,620,652

THREADED SPOOL STORAGE CONTAINER APPARATUS AND METHOD

William S. Hanlon, Scottsdale, Ariz., assignor to Design Inceptions, Inc., Phoenix, Ariz.

Filed Oct. 9, 1985, Ser. No. 785,866
Int. Cl.[4] A41H *31/00*
U.S. Cl. 223—107 8 Claims



1. An improved threaded spool container apparatus, comprising:

at least one container means for housing a plurality of threaded spools;

at least one adjustable arm member means for mounting said container means;

a base member means having a plurality of apertures therethrough for accommodating therein said adjustable arm member means;

at least one lever member means for operably coupling with said adjustable arm member means;

a bottom piece member means for coupling to said base member means; and

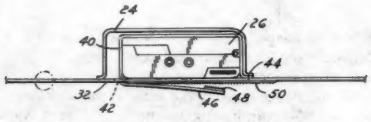
a plate member means for integrally coupling to said bottom piece member means.

4,620,653

ADJUSTABLE BELT STEREO PLAYER HOLDER

Edwin B. Farrell, 316 Pioneer Club Rd., East Grand Rapids, Mich. 49506

Filed Jan. 22, 1985, Ser. No. 693,542
Int. Cl.[4] B65D *25/10*
U.S. Cl. 224—242 21 Claims



1. In a belt adapted to be wrapped and fastened securely about the waist of a person with the back of the belt adjacent the person and a pocket affixed to the front of the belt and extending outwardly therefrom, the improvement comprising in combination,

a sleeve in said pocket affixed at one end of the sleeve within the pocket and having a tongue portion at the opposite end of the sleeve,

an oblong aperture in the back of the pocket extending through the belt, said aperture located adjacent the side of the pocket opposite the side where the sleeve is affixed, and

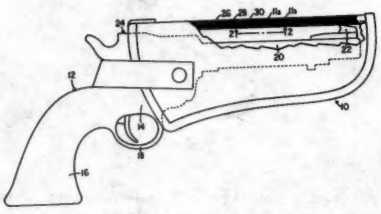
adjustable complementary attachment means on said tongue and the back of the belt adjacent the aperture, said tongue extending through said aperture for engagement with the back of the belt.

4,620,654

HANDGUN HOLSTER WITH ABRASION-RESISTANT LONGITUDINAL SPINE

Clifton L. Cook, Boise, Id., assignor to Michaels of Oregon Co., Portland, Oreg. and Bianchi International, Temecula, Calif.

Continuation of Ser. No. 657,740, Oct. 4, 1984, abandoned, which is a continuation of Ser. No. 509,323, Jun. 30, 1983, Pat. No. 4,485,948. This application Oct. 22, 1985, Ser. No. 789,931
The portion of the term of this patent subsequent to Dec. 4, 2001, has been disclaimed.
Int. Cl.[4] F41C *33/02*
U.S. Cl. 224—243 7 Claims



1. In an improved handgun holster having a fabric lining and a fold defining a longitudinal spine location in the holster, the barrel of a handgun properly held in the holster normally extending along said longitudinal spine location, and the holster further having a handgun-receiving opening, the improvement comprising:

a flexible, elongate web-like fabric spine structure located along and limited to the vicinity of said fold defining said longitudinal spine location; and means for securing said spine structure to the interior of said holster at least along a major portion of the inside of said longitudinal spine location, in an area extending from said handgun-receiving opening, with said spine structure exposed and overlying a portion of the fabric lining in position for providing protection of the fabric lining of the holster in said longitudinal spine location against abrasion by contact with the sights of a handgun within said holster.

4,620,655

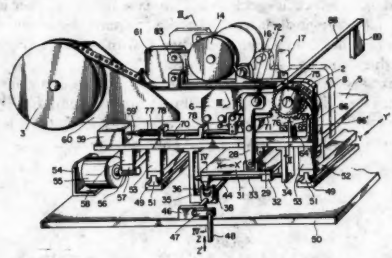
APPARATUS FOR SUPPLYING TAPED PARTS

Yasuhiro Fujita, Yokosuka, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 20, 1985, Ser. No. 736,150
Claims priority, application Japan, May 21, 1984, 59-100558
Int. Cl.[4] B65H *20/00*; H05K *13/02, 3/00*
U.S. Cl. 226—109 2 Claims

1. An apparatus for supplying taped parts, the apparatus comprising: a plurality of tapes carrying the parts to be mounted on an object; a stationary table; a slide table slidably mounted on said stationary table; a slide table slide means disposed between said slide table and said stationary table; a plurality of tape pay-off means provided on said slide table and adapted for paying off the tapes in the direction orthogonal to the direction of sliding of said slide table; a plurality of tape feeding means corresponding in number to said tape pay-off means and disposed on said slide table, said tape feeding means being adapted to feed, at a constant pitch, said tapes paid-off from said tape pay-off means; power transmission means operatively connected to said tape feeding means and capable of transmitting the power to said tape feeding means even during the sliding of said slide table; a driving system drivingly connected to said power transmission means, and switch-over

means corresponding in number to said tape feeding means and said tape pay-off means and drivingly connected to said power



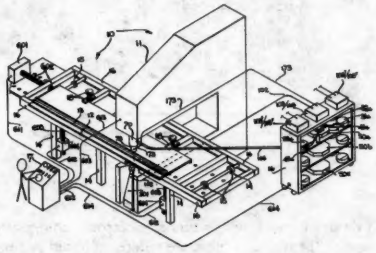
transmission means so as to selectively transmit the power to said tape feeding means.

4,620,656

AUTOMATIC RIVET-FEEDING SYSTEM FOR RELIABLE DELIVERY OF PLURAL RIVET SIZES

Archie R. McClay; Raymond H. Billington, both of Huntington Beach, and Chester W. Ruckman, Covina, all of Calif., assignors to Herbert L. Engineering Corp., Frederick, Md.

Filed Apr. 11, 1983, Ser. No. 483,487
Int. Cl.[4] B21J *15/28*
U.S. Cl. 227—5 **26 Claims**



1. A system for feeding rivets, each having a respective axis of symmetry and having various rivet parameters including length of such rivets, to the installing head of a riveting machine for installation into a plurality of locations in an article under manufacture by insertion of each such rivet parallel to its axis of symmetry of such rivet into such article, followed by upset of such rivet, such locations having correspondingly various location parameters including thickness of such article; such installing head being subject to limited clearance within the mouth of such riveting machine; said system comprising:

automatic measuring means for measuring such location parameters for each one of such locations in turn;

a plurality of storage containers, each container being adapted for storage of a multiplicity of such rivets having a particular set of such rivet parameters in common;

a plurality of removal devices, each device being associated with a respective one of the storage containers for removing such rivets from its associated storage container;

means defining a delivery path linking the transfer station, recited hereunder, with the injector, also recited hereunder;

at least one transfer station having a plurality of independently actuable transfer devices; each transfer device being associated with a respective one of the plurality of removal devices and including:

means for receiving such rivets from its associated removal device, and

means for automatically transferring such rivets into the delivery path;

whereby each different transfer device of the plurality may be identified with a different set of such rivet parameters, corresponding to such rivet parameters of rivets received from the associated removal device and storage container;

each transfer device being actuable exclusively through a short rectilinear stroke, to effect transfer motions that are defined exclusively by alignment of two positive stops associated with each transfer device;

automatic selection means, responsive to the measuring means, for determining and selecting a set of such rivet parameters which corresponds to such measured location parameters, for each one of such locations in turn, and for selecting a transfer device identified with that set of such rivet parameters;

automatic actuating means, responsive to the selection means, for automatically actuating the selected transfer devices in turn; and

an injector for receiving such rivets from the selected transfer device, via the delivery path, and for presenting such received rivets, one at a time in a controlled attitude, to such installing head, said injector comprising:

means for accepting each such rivet from the delivery path by translation of such rivet substantially parallel to its axis of symmetry and at a substantial angle to the direction of upset, and

means for moving each such rivet, from the position in which it is accepted, through at least one substantial angle into a feed position wherein its axis of symmetry is substantially parallel to the upset direction;

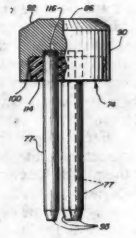
whereby one such rivet, having such rivet parameters selected by the selection means as corresponding to the location parameters for each particular location, is delivered to such installing head in proper orientation for insertion and upset in that particular location, despite such limited clearance within the mouth of the riveting machine.

4,620,657

DRIVER FOR RIVETING FASTENERS TO A BELT

Alfred E. Gladding, Naperville, and Edward C. Musil, Lyons, both of Ill., assignors to Flexible Steel Lacing Company, Downers Grove, Ill.

Continuation-in-part of Ser. No. 710,103, Mar. 11, 1985, which is a continuation of Ser. No. 489,372, Apr. 28, 1983, abandoned. This application May 3, 1985, Ser. No. 730,370
Int. Cl.[4] B25C *9/00*; B25D *1/00*
U.S. Cl. 227—147 **6 Claims**



1. A driver for driving a plurality of fasteners through a belt and for securing a belt fastener to the belt, said driver comprising a metal cap including

a metal block-shaped body of a predetermined length,

a plurality of elongated metal drive rods secured at their upper ends in the body, said drive rods having a length substantially greater than said predetermined length of said body,

said drive rods being parallel and extending to lower ends for driving engagement with the fasteners,

an upper impact surface on the body to receive a blow to drive the lower ends of the drive rods and to drive the fasteners through the belt, a bottom wall on said body having a recess means therein, and

a cushioning means of elastomeric material disposed in said recess means and in tight engagement with upper portions of the drive rods cushioning the upper portions of the drive rods against permanent deformation or breaking from the body under a non-coaxial blow to the impact surface.

4,620,658

ASSEMBLY OF FRAMES

Gerald Martin, Shrewsbury, England, assignor to Textron, Inc., Providence, R.I.

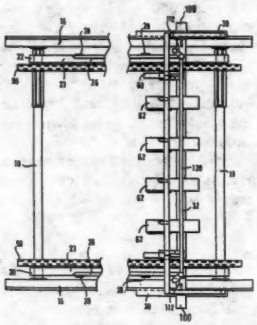
PCT No. PCT/GB83/00343, § 371 Date Aug. 31, 1984, § 102(e) Date Aug. 31, 1984, PCT Pub. No. WO84/02677, PCT Pub. Date Jul. 19, 1984

PCT Filed Dec. 22, 1983, Ser. No. 648,167

Claims priority, application United Kingdom, Dec. 31, 1982, 8237049

Int. Cl.[4] B27M *3/00*

U.S. Cl. 227—152 **24 Claims**



1. A machine for fastening longitudinal and transverse frame members into a frame comprising

a fixed stationary assembly including a pair of transversely spaced longitudinally extending support means for receiving and supporting a pair of longitudinal frame members in generally stationary operative positions wherein the pair of frame members are disposed in generally parallel coextensive relationship with respect to one another,

said fixed stationary assembly providing access between said longitudinally extending support means enabling an operator to progressively move from an initial operating position between one pair of coextensive end portions of a pair of longitudinal frame members on said pair of support means in said stationary operative positions to a final operating position between the other pair of coextensive end portions of the pair of longitudinal frame members in said stationary operative positions,

a transversely extending movable assembly mounted on said fixed stationary assembly for longitudinal movement from an initial position adjacent the initial operator operating position and a final position adjacent the final operator operating position,

means for receiving and supporting successive transverse frame members in progressive longitudinally spaced operative positions extending transversely between the pair of longitudinal frame members on said pair of support means in said stationary operative positions,

means carried by said movable assembly for releasably clamping (1) each successive transverse frame member on opposite sides thereof in the direction of longitudinal spacing thereof so as to releaseably hold the transverse frame member in its operative position and (2) the juncture between each successive transverse frame member in its operative position with each longitudinal frame member in a direction which is transverse with respect to both of the associated frame members, and

means carried by said movable assembly for applying fastener means to each juncture during the clamping thereof by said releasable clamping means so as to fasten said juncture when released by said clamping means.

4,620,659

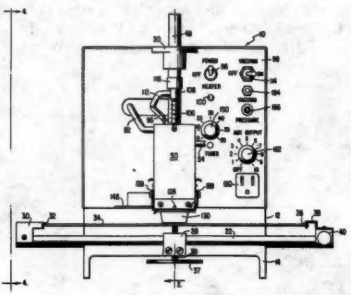
DEVICE FOR ATTACHING MODULAR ELECTRONIC COMPONENTS TO OR REMOVING THEM FROM AN INSULATIVE SUBSTRATE

John B. Holdway, College Park, Md., assignor to Pace, Incorporated, Laurel, Md.

Filed Apr. 2, 1984, Ser. No. 595,606

Int. Cl.[4] B23K *29/00*

U.S. Cl. 228—20 **1 Claim**



1. A device for attaching modular electronic components to or removing them from a substrate where each said component has a plurality of terminals extending from the periphery thereof, said device comprising:

heater means having at least one passage extending therethrough for heating a fluid flowing through said passage;

first nozzle means disposed at one end of the heater means, said first nozzle means being spaced from and above said plurality of terminals of said components when in its working position, said first nozzle means including a plate having a plurality of nozzle openings where the configuration of the plurality of openings generally corresponds to that of the plurality of terminals of the component and where the heated fluid from the heater means flows through the nozzle openings;

second nozzle means disposed adjacent to said first nozzle means on the side of said first nozzle means opposite said heater means for directing the heated fluid flowing through the nozzle openings to the terminals of the substrate; and

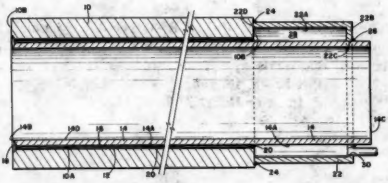
at least one of said nozzle openings being larger in diameter than the remaining openings, said at least one of said nozzle openings being positioned substantially directly over at least one of the component terminals where said one terminal is connected to a ground plane or the like disposed at said substrate so as to provide more heat to said one terminal, said heated fluid being urged through said plurality of nozzle openings towards said plurality of terminals.

4,620,660

METHOD OF MANUFACTURING AN INTERNALLY CLAD TUBULAR PRODUCT

William C. Turner, 85 Pinto La., Sedona, Ariz. 86336

Filed Jan. 24, 1985, Ser. No. 694,347
Int. Cl.[4] B23K *31/02*
U.S. Cl. 228—186 25 Claims



1. A method of manufacturing an internally clad tubular product employing a tubular host having a first and a second end, comprising:

(a) plating the internal surface of the tubular host with a low melting point bonded metal alloy;

(b) inserting a tubular cladding member into the plated tubular host;

(c) circumferentially welding one end of the cladding member and the tubular host and welding a circumferential bag between the second end of the tubular host and tubular cladding member to form a sealed subassembly;

(d) evacuating the annular space and changing it with inert gas by attachment of apparatus to said bag in a manner to substantially remove all water and oxygen and to leave the annular space filled with the inert gas;

(e) heating the subassembly from about 1,650° F. to about 2,000° F.; and

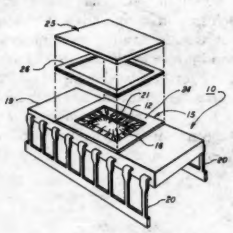
(f) forming the heated subassembly in a mill to metallically bond the cladding member to the tubular host.

4,620,661

CORROSION RESISTANT LID FOR SEMICONDUCTOR PACKAGE

James A. Slatterly, Sauguoit, N.Y., assignor to Indium Corporation of America, Utica, N.Y.

Filed Apr. 22, 1985, Ser. No. 725,673
Int. Cl.[4] H01L *23/06*
U.S. Cl. 228—209 8 Claims



1. The method of manufacturing a closure device for hermetically sealing an electronic package that includes the steps of

forming a sheet of an iron based metal into a lid for closing an electronic package,

electroplating a first layer of nickel to a thickness of at least 75 microinches over the entire outer surface of the lid,

electroplating a thin layer of a noble metal or an alloy of a noble metal over the entire outer surface of the first layer, said second layer being about one-tenth the thickness of the first layer,

electroplating a third layer of nickel over the entire outer surface of said second layer, the thickness of said third layer being about equal to the thickness of said first layer, and

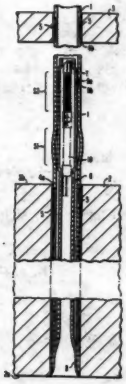
electroplating a top layer of gold over the entire outer surface of the third layer to a thickness of at least 25 microinches to provide a surface that is capable of being bonded to a gold-tin solder frame to form a hermetic seal therebetween.

4,620,662

TWO-POSITION SLEEVE BRAZING PROCESS

John M. Driggers, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 25, 1984, Ser. No. 634,336
Int. Cl.[4] B23K *31/02*
U.S. Cl. 228—227 21 Claims



21. A process for brazing a metallic sleeve concentrically disposed within a metallic tube, wherein said sleeve includes a brazing reservoir which includes a brazing alloy, comprising the sequential steps of:

(a) applying radiant heat from a heat source which is movable within said sleeve and tube around a first longitudinal section of the tube which does not surround any portion of the brazing reservoir of said sleeve until said first longitudinal section is radially expanded by the radiant heat;

(b) moving said heat source to a position adjacent to said brazing reservoir of said sleeve, and

(c) applying radiant heat from said heat source to said brazing reservoir of said sleeve until said brazing alloy melts and brazes said sleeve to said tube.

4,620,663

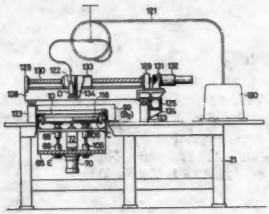
PARTS-CONNECTING APPARATUS USING SOLDER

Hitoshi Odashima, Yokohama; Hideaki Sasaki; Shinichi Kazui, both of Hadano; Shigeo Shiono; Osamu Isshiki, both of Hitachi, and Takeshi Kawana, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 19, 1985, Ser. No. 702,740
Claims priority, application Japan, Feb. 29, 1984, 59-36022
Int. Cl.[4] B23K *37/04, 31/02*
U.S. Cl. 228—44.7 5 Claims

1. A parts-connecting apparatus using solder, wherein solder is provided between wiring patterns on a wiring board and leads of a part to be mounted thereon to connect said wiring patterns and said leads together via said solder, the apparatus comprising a positioning means for setting said wiring board in a predetermined position, an attractor means for fastening said leads to predetermined portions of the wiring patterns on said wiring board including a permanent magnet disposed opposite

one surface of said wiring board, means for adjustably mounting said permanent magnet at a distance from said surface of said wiring board, buffer means for decreasing a speed of upward movement produced by said permanent magnet as a distance between the permanent magnet and the surface of the



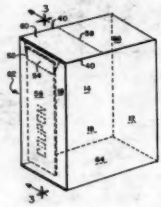
wiring board is decreased, heating means including means disposed above the wiring board for heating the leads of the part, and means for movably mounting said heating means so as to enable the same to heat said leads of said part and thermally melt said solder.

4,620,664

COUPON BEARING CARTON CONSTRUCTION

George Kaufman, and Ernest E. Lindlar, both of North Brunswick, N.J., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Filed Aug. 9, 1985, Ser. No. 764,315
Int. Cl.[4] B65D *5/54*
U.S. Cl. 229—17 R **7 Claims**



1. A carton for containing and dispensing a bulk material, comprising:

(a) a pair of opposed face panels;

(b) a pair of opposed side panels connected to the respective face panels;

(c) a bottom panel joined to one end of each of said face and side panels for closing the bottom of the carton;

(d) a top panel joined to the other end of each of said face and side panels for closing the top of the carton, the top panel having a fold line extending transversely across the surface thereof;

(e) a partially detachable tab formed in one of said side or face panels adjacent said top panel proximate the fold line therein; the tab being defined by inwardly tapering side perforations extending downwardly from the edge of the top panel and adjoining base perforations extending generally transversely across a portion of the width of said one side or face panel, and the tab being movable outward from the plane of said one side or face panel when said lines of perforation are parted to define a dispensing opening for said carton; and

(f) an insert detachably secured to the interior surface of said tab and extending adjacent to and lengthwise of said one side or face panel within said carton,

said insert being drawn from said carton when said tab is partially detached from said carton and pulled outwardly therefrom and being detachable from said tab without being torn, destroying the integrity of the carton or disturbing the contents of the carton, and said tab retaining its form upon partial detachment from said carton so that it can be repositioned to close the opening in the carton when dispensing of said bulk material is no longer desired.

4,620,665

CONTAINER WITH INTEGRAL TOGGLE CLOSURE

Thomas W. McSherry, Stamford, Conn., assignor to Nathaniel H. Garfield, Harrison, N.Y., a part interest

Filed Aug. 18, 1983, Ser. No. 524,241
Int. Cl.[4] B65D *3/20*; B31B *1/72*
U.S. Cl. 229—43 **45 Claims**

1. Container provided with means for closing and opening the interior thereof with positive locking action in either position which comprises:

a. deformable enclosure member defining an inner containment region and at least one opening; and

b. closure means secured to said enclosure member for hinged movement adjacent said opening and configured and dimensioned to provide selective closing and opening of said opening, said closure means being bi-directionally movable from a generally locked first position, wherein said closure means positively closes said opening, through an intermediate position to a generally locked second position wherein said closure means positively opens said opening, at least one dimension across said closure means being greatest when said closure means is in its intermediate position, said at least one dimension being greater than the corresponding dimension across said opening of said enclosure member when said enclosure member is in its undeformed condition such that said enclosure member resiliently deforms in cooperative interaction with said closure means as said closure means moves between said first and second positions through said intermediate position so as to aid further movement of said closure means from said intermediate position to either said second position or said first position, respectively, thus positively locking said closure means in said first closed position or positively opening said closure means in said second open position, respectively.

4,620,666

FOLDING SHIPPING CONTAINER

Jaime Lacasa, and Judith N. Lacasa, both of 2617 Cleveland Dr., Ames, Iowa 50010

Filed Nov. 6, 1985, Ser. No. 795,336
Int. Cl.[4] B65D *5/22*
U.S. Cl. 229—149 **3 Claims**

1. A rectangular folding shipping container comprising:

a rectangular bottom wall having a front edge, a rear edge, and opposite side edges;

a rectangular rear wall having a bottom edge connected to said rear edge of said bottom wall along a fold line, said rear wall having an upper edge, and two opposite end edges,

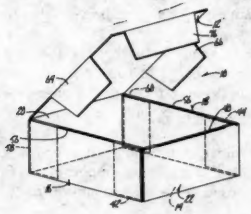
a pair of rear wall flaps each connected to one of said end edges of said rear wall along a fold line;

a rectangular top wall having a rear edge, a front edge, and two opposite side edges, said rear edge of said top wall being connected to said upper edge of said rear wall along a fold line;

a front top flap, and a pair of side top flaps each being connected to one of said front and side edges respectively of said top wall;

a pair of rectangular sdiewalls each having front and rear ends and extending upwardly from one of said side edges of said bottom wall, each of said sidewalls comprising an outer sidewall panel and an inner sidewall panel, each having an upper edge, a lower edge, and opposite end edges, said upper edges of said inner and outer sidewall panels being joined along a fold line, said lower edge of said outer sidewall panel being joined to one of said side edges of said bottom wall, said lower edge of said inner sidewall panel being closely adjacent said bottom wall;

a rectangular front wall extending upwardly from said front edge of said bottom wall and comprising an outer front wall panel and an inner front wall panel, each of which has an upper edge, a lower edge, and two opposite end edges, said upper edges of said inner and outer front wall panels being joined along a fold line, said lower edge of said outer front wall panel being joined to said front edge of said bottom wall, said lower edge of said inner front wall panel being closely adjacent said bottom wall;



a pair of front wall flaps, each of which is joined along one of said end edges of said outer front wall panel;

said rear wall flaps each protruding between said inner and outer sidewall panels adjacent said rear end of one of said sidewalls;

said front wall flaps each protruding between said inner and outer sidewall panels adjacent said front end of one of said sidewalls;

said rear wall flaps and said front wall flaps being spaced from one another between said inner and outer sidewall panels to define a slot cavity therebetween;

each of said fold lines between said inner and outer sidewall panels and between said inner and outer front wall panels being provided with a longitudinal slot therein;

said side top flaps of said top wall each protruding through one of said slots of said sidewalls, extending downwardly to said bottom wall and substantially completely filling said slot cavities therein so as to combine with said inner and outer sidewall panels and with said rear wall flaps and said front wall flaps to create a three ply construction to each of said sidewalls;

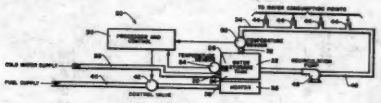
said front top flap protruding through said slot of said front wall and extending downwardly between said inner and outer front wall panels to said bottom wall so as to combine with said inner and outer front wall panels to create a three ply construction to said front wall.

4,620,667

HOT WATER HEATING SYSTEM HAVING MINIMUM HOT WATER USE BASED ON MINIMUM WATER TEMPERATURES AND TIME OF HEATING

Tom R. Vandermeyden, Lakewood; Oscar R. Dufau, Fullerton, and Frederick Blau, Jr., Fountain Valley, all of Calif., assignors to Fluidmaster, Inc., Anaheim, Calif.

Filed Feb. 10, 1986, Ser. No. 827,372
Int. Cl.[4] F24H *1/00*
U.S. Cl. 236—20 R 36 Claims



1. In a water heater contol system for constantly controlling the heating and use of hot water from a water heater unit of the type having water heater means with a water heater control means therefor converting between on for heating water and off free of heating water, water inlet means for feeding water to the water heater means to be heated, water outlet means for feeding heated water from the water heater means, water distribution means operably connected to the water outlet means for distributing hot water to be used; the water heater control system further including: water temperature sensor means at least operably connected to said water outlet means for sensing the temperature of the water ready to flow to said water distribution means; processor and control means operationally connected to said water temperature sensor means and said water heating control means for determining the start of a particular time period which is one of a definite group of consecutive time periods and each is a repeat of the same one of preceding groups of time periods, for setting .. generally exact water temperature above a given minimum water temperature for said water temperature sensor means and an overall portion of on time out of full time for said water heater control means as regulated on and off by the temperature sensed by said water temperature sensor means for throughout said particular time period exactly according to the overall average of actual settings recorded in actual use during at least certain of a previous of said same one of a previous group of time periods and those close to said previous group of time periods and those closely approaching said present particular time period, for actually recording directly exactly as they occur of water temperatures for said water temperature sensor means and portions of time for said water heater control means throughout and according to actual use of said water temperature sensor means and said water heater control means during the particular time period, for repeating for each succeeding of said group of consecutive time periods to the end thereof, for starting and continuing use of a next group of consecutive time periods followed by continuing with following groups of consecutive time periods and based on the average of the present actually recorded settings of said certain of said previous same one and those close to said previous same one and those closely approaching said then present particular time period.

4,620,668

ADAPTIVE CONTROL SYSTEM

John T. Adams, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

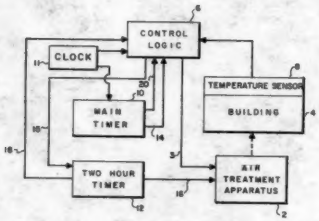
Filed Apr. 25, 1985, Ser. No. 727,315
Int. Cl.[4] F23N *5/20*
U.S. Cl. 236—46 R 15 Claims

1. An adaptive control system comprising

sensing means for sensing an environmental variable to produce a first output signal representative of the variable,

a first timer means for producing a second output signal after a first predetermined period,

second timer means responsive to said second output signal and to a timing control sign for producing a control signal at the end of a time period selectable from a second predetermined time period less than said first predetermined time period,



environmental variable control means responsive to said control signal for controlling said variable, and

setpoint comparator means for comparing said first output signal with a setpoint level at the end of the sum of said first and second time periods to produce said timing control signal to select said selectable time period.

4,620,669

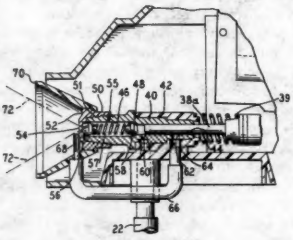
BLOW-BY CIRCUIT

Gary C. Polk, Eden Prairie, Minn., assignor to Wagner Spray Tech Corporation, Minneapolis, Minn.

Filed Aug. 22, 1985, Ser. No. 768,213

Int. Cl.[4] B05B *9/04*

U.S. Cl. 239—120 **6 Claims**



1. A liquid spray gun which includes:

piston pump means for withdrawing a liquid from a reservoir and providing a force for spraying the liquid;

nozzle means for receiving liquid from the piston pump and spraying said liquid at a high velocity, said piston pump means including collection port means for accumulating leakage flow from within said pump; and

fluid-circuit means for collecting leakage flow from said collection port means and delivering said leakage flow to a position forward and adjacent the nozzle, said circuit means including conduit means having an inlet end connected to said collection port and an outlet end positioned adjacent said nozzle,

whereby said spray induces a venturi effect in said fluid circuit means for cooperation in drawing leakage flow from the collection port to the nozzle.

4,620,670

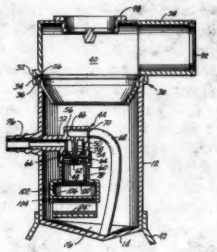
GAS-POWERED NEBULIZER

Nathaniel Hughes, Palm Springs, Calif., assignor to Vortran Corporation, Culver City, Calif.

Continuation-in-part of Ser. No. 555,703, Nov. 28, 1983. This application Sep. 18, 1984, Ser. No. 652,753

Int. Cl.[4] A61M *11/06;* B05B *7/26*

U.S. Cl. 239—338 **2 Claims**



1. A device for nebulizing liquid with a compressed gas comprising:

a chamber body including a chamber base portion, a chamber bore, a discharge and a restrictive annular passageway extending from the chamber bore to the discharge and an auxiliary passage passing through the chamber base portion from the chamber bore to the passageway;

a closure for the chamber bore;

means for supplying the compressed gas to the chamber bore;

a liquid port to admit liquid through the chamber base portion to the discharge to supply liquid thereto, the compressed gas flowing through the passageway and to the discharge and mixing with the liquid to nebulize the liquid;

a tubular member comprising a first end adjoining the discharge and a second end opposite the first end and a screen disposed at the second end of the tubular member; and

a bluff body spaced from the screen to slow flow of nebulized liquid and generate vortices wherein the bluff body comprises first and second ends and is supported at the first and second ends, respectively, by first and second arms which are supported by the tubular member and wherein the arms are spreadable for interchangeably receiving bluff bodies of different sizes.

4,620,671

METHOD AND APPARATUS FOR TREATING WASTE PAPER SUSPENSIONS

Thomas F. Skaar, Green Bay, Wis., assignor to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed May 29, 1984, Ser. No. 614,879

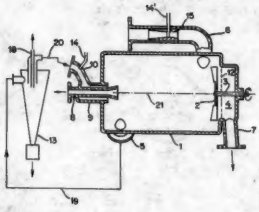
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1983, 3320125

Int. Cl.[4] B02C *13/02*

U.S. Cl. 241—19 **8 Claims**

1. Refining apparatus adapted to refine a pollutant laden suspension of waste paper, said apparatus including a housing, means within said housing for inducing a turbulent flow in the suspension so as to separate said suspension into various fractions, at least one inlet pipe attached to said housing for delivering suspension to said housing, means for directly introducing air into said at least one inlet pipe for admixture with; the suspension in order to facilitate separation of said suspension into said various fractions, wherein said means for directly

introducing air comprises at least one air injector connected to said at least one inlet pipe, said at least one air injector being



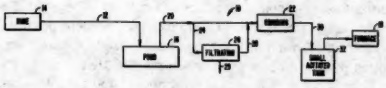
adapted to introduce compressed air directly into said suspension prior to its introduction into said housing.

4,620,672

APPARATUS AND METHOD FOR CONVERTING PIPELINE FINE COAL SLURRY TO COAL WATER MIXTURE SUITABLE FOR DIRECT COMBUSTION IN BOILERS

Irving Leibson, Houston, Tex., and Horst Huettenhain, Benecia, Calif., assignors to Bechtel International Corporation, San Francisco, Calif.

Filed Feb. 4, 1985, Ser. No. 697,985
Int. Cl.⁴ B02C *19/12*
U.S. Cl. 241—21 **19 Claims**



1. A system for preparing coal for direct combustion in a boiler comprising:

a pipeline adapted to extend from a coal source to the region at which the boiler is located, the pipeline adapted to carry a coal slurry to said region;

means at said region for holding the coal slurry received from said pipeline;

means adjacent to said holding means for grinding a coal slurry;

a fluid line for coupling the holding means with the grinding means, said fluid line having means between the ends thereof for dividing the fluid line into a pair of fluid paths;

means coupled with one of said fluid paths for dewatering the part of said slurry portion therein so as to increase the solids content of said slurry portion before the latter reaches said grinding means; said other fluid path directly coupled to said grinding means to allow the remaining part of the slurry to flow directly into the grinding means and

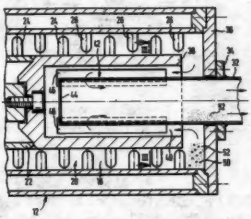
means coupled with the grinding means for directing the coal slurry portion from the grinding means toward a boiler.

4,620,673

AGITATOR MILL

Giacomo Canepa, Selb, and Klaus Ott, Sparneck, both of Fed. Rep. of Germany, assignors to Gebrüder Netzsch Maschinenfabrik GmbH & Co., Selb, Fed. Rep. of Germany

PCT No. PCT/EP84/00391, § 371 Date Jul. 11, 1985, § 102(e) Date Jul. 11, 1985, PCT Pub. No. WO85/02559, PCT Pub. Date Jun. 20, 1985
PCT Filed Dec. 7, 1984, Ser. No. 756,994
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1983, 3345680
Int. Cl.⁴ B02C *17/16*
U.S. Cl. 241—69 **21 Claims**



1. An agitator mill comprising

a milling body (12) which includes a grinding chamber (18) to be filled at least partly with grinding media (50) and material (52) to be ground and has an inlet (28) for material to be ground and an outlet (30) for crushed material,

an agitator shaft (22) having an inner shaft end inside the grinding chamber (18),

and a separating means (42) permitting finished pulverized material (52) to flow out of the grinding chamber (18) to the outlet (30) yet retaining grinding media (50), wherein

the agitator shaft (22) has an end portion (38) formed with a cavity (40) therein which is open at the inner shaft end,

the end portion (38) of the agitator shaft (22) includes recesses (46), distributed around the cavity (40) and spaced from the inner shaft end, through which said grinding media (50) from said grinding chamber (18) may axially flow into the cavity (40) and through the inner shaft end to flow back into the grinding chamber (18),

and the separating means (42) is arranged at least substantially inside the cavity (40).

4,620,674

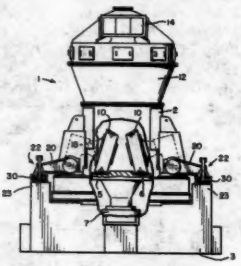
PNEUMATIC ACTUATED ROLLER ASSEMBLY FOR A ROLLER MILL

Kenneth W. Hanstine, Walnutport; Stephen A. Lukacz, Nazareth, and Jeffrey N. Nelson, Bethlehem, all of Pa., assignors to Fuller Company, Bethlehem, Pa.

Filed Jul. 16, 1984, Ser. No. 631,355
Int. Cl.⁴ B02C *15/00*
U.S. Cl. 241—121 **4 Claims**

1. In a grinding mill including a housing, a grinding table mounted within said housing for rotation about a substantially vertical axis, at least one grinding roller mounted for rotation about its own axis which is at an angle to the axis of the table and cooperable with said table for grinding material between said table and said roller, an improved means for supporting said grinding roller comprising; a plurality of horizontal spaced apart pressurized; flexible pneumatic cylinder means each operatively connected to the grinding roller for producing a downward grinding force on said grinding roller; a shaft, said grinding roller connected to said shaft and a crank arm connected to said shaft; said pneumatic cylinder means being positioned to exert an upward force on said crank arm

whereby the upward force on the crank arm is transmitted to said grinding roller through said shaft to produce a downward force on said grinding roller to thereby operatively connect the pneumatic cylinder means to the grinding roller.



4,620,675

COMPOSITE FLEXIBLE PULP REFINER DISK

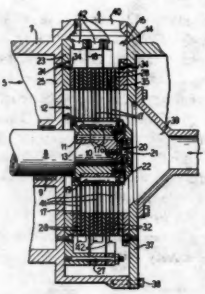
Edward C. Kirchner, Pittsfield, Mass., assignor to Beloit Corporation, Beloit, Wis.

Filed Sep. 7, 1983, Ser. No. 530,008

The portion of the term of this patent subsequent to Jul. 30, 2002, has been disclaimed.

Int. Cl.[4] B02C *7/14*

U.S. Cl. 241—261.3 **8 Claims**



1. In an apparatus for reducing particulate material by means of a plurality of radially extending relatively rotatable and axially confronting refining surface means between which the material is caused to flow while being refined during relative rotation of said surface means, and means for effecting flow of the material radially between and across said surface means;

at least one annular refining disk which is in and of itself axially resiliently flexible between its radially opposite margins and providing a part of said refining surface means and having means at one margin for securing the disk in an operative relation in the apparatus, said disk having flat opposing faces;

a pair of refining ring plates of substantially less radial width than said disk and having flat faces opposing one another and sandwiching the other margin of said disk therebetween in flat face to flat face abutment and said plates providing oppositely facing refining surfaces for the disk;

a tenacious structural bonding agent film between said other margin and each of said sandwiching faces and fixedly securing said refining ring plates directly to said other margin;

there being a substantial radial extent of said disk between said securing means and said ring plates permitting relative axial displacement of said margins by axial flexing of said substantial radial extent of the disk;

and said bonding agent film being the sole means for securing said ring plates to said other margin, and thereby avoiding need for any other kind of securing means for said ring plates.

4,620,676

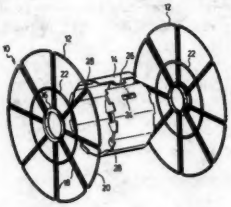
DISMOUNTABLE REEL

Manfred Missalla, 130 Don Park Rd., #6, Markham, Ontario, Canada L3R 1C3

Filed Sep. 19, 1985, Ser. No. 777,754

Int. Cl.[4] B65H *75/18, 75/22*

U.S. Cl. 242—77 **3 Claims**



1. A dismountable reel comprising;

two side wall members of generally circular shape, having inside and outside faces;

attachment bar means of predetermined width on the inside faces of the said wall members;

openings around said attachment bar means;

a core member formed of a generally rectangular strip of sheet metal;

junction means at both ends of said strip, whereby the same may be formed into a generally cylindrical shape, and,

attachment tongue members extending outwardly from either side edge of said core member;

notches between said tongue members;

bent portions on the free ends of said tongue members, adapted to wrap around said attachment bar means, and,

abutment edges on said notches adapted to abut against said inner faces of said side wall members, said bent portions of said tongue members being spaced from said abutment edges of said notches a predetermined distance whereby to permit relative movement between said side wall members, and said core member.

4,620,677

SEAT BELT RETRACTOR

Kosuke Nagao; Shuzo Ishii; Noriyasu Shinka; Yoshihiro Maeno, and Naoki Morita, all of Osaka, Japan, assignors to Ashimori Industry Co., Ltd., Osaka, Japan

Filed Jan. 8, 1985, Ser. No. 689,684

Int. Cl.[4] B60R *22/34*

U.S. Cl. 242—107.6 **14 Claims**

1. A seat belt retractor contained within a housing and a cover for said retractor which allows a seat belt and associated buckling parts to be extended while absorbing slack, and further includes a device for recalling the position of the seat belt when the belt-rewinding force is canceled, said retractor comprising:

a spindle having a surface disposed within said housing;

a rewinding spring operatively associated with said spindle, said seat belt being rewound onto the spindle surface which rotates in a belt rewinding direction due to the resiliency of said rewinding spring;

a rotatable member;

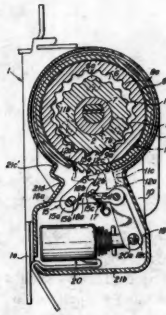
means engaged with said rotatable member and said spindle

for decreasing the number of revolutions of the rotatable member relative to that of the spindle;

external gear operatively associated with said rotatable member by way of an auxiliary spring, said external gear having a limited rotation range relative to the rotatable member and having square teeth on the outer periphery thereof;

a stopper having a body with at least two square teeth on the top end thereof which rotates so as to engage or disengage said square teeth of said stopper with the square teeth of the external gear, said stopper having a long slot formed in said body at the center of rotation of said stopper so as to be slidably movable along said slot;

a lever which rotates the stopper so as to engage said stopper teeth with the teeth of the external gear, said lever supporting said stopper when the stopper teeth are engaged with the external gear;



a solenoid plunger driving the lever and maintaining said engagement when energized upon connection of said seat belt buckling parts;

a friction plate frictionally coupled to the rotatable member so as to allow said plate and member to rotate together; and

a first control projection provided on the outer periphery of said friction plate which inhibits the engagement of the stopper teeth with the teeth of the external gear when the solenoid plunger is energized so as to allow rewinding of said seat belt slack, said friction plate having a second control projection formed on the periphery thereof so as to inhibit the engagement of the stopper teeth with the teeth of the external gear before energizing the solenoid plunger, thereby allowing the seat belt to be extended.

4,620,678

AUTOMATIC MAGNETIC TAPE LOADING APPARATUS

Masumi Kumakura, Yokohama; Takeshi Kawashima, Atsugi, and Otoya Sakai, Musashino, all of Japan, assignors to Victor Company of Japan, Ltd., Japan

Continuation of Ser. No. 379,504, May 18, 1962, abandoned. This application Jan. 25, 1985, Ser. No. 695,732

Claims priority, application Japan, May 19, 1981, 56-75288

Int. Cl.[4] G03B *1/58;* G11B *15/32*

U.S. Cl. 242—195 **15 Claims**

1. An automatic magnetic tape loading apparatus in a magnetic tape recording/playback system, comprising:

a base having a pair of first and second recesses spaced from each other, and a channel connected to and extending between said first and second recesses;

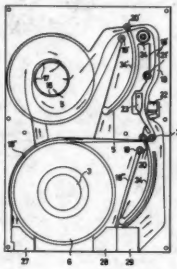
a cover covering said first and second recesses and said channel;

a reel support rotatably mounted in said first recess for supporting an open feed reel having a magnetic tape wound thereon;

a takeup hub rotatably mounted in said second recess for winding the magnetic tape from said open feed reel received through said channel;

first means on said base for supplying two streams of air under positive pressure into said first recess in directions around said open feed reel and toward said channel to direct a leading end portion of said magnetic tape from said open reel toward said channel; and

second means on said base adjacent said first means and outside of said channel for supplying a current of air under positive pressure into said channel toward said second recess to carry said leading end portion of the magnetic



tape in coaction with said streams of air from said first means down said channel toward said second recess, said second means being located upstream from an entrance opening of said channel through which opening said tape enters the channel from the first recess, said cover having an opening positioned for discharging from said second recess said streams and current of air introduced under positive pressure into said second recess after said streams and current of air carry said leading end portion of the magnetic tape down said channel into said second recess and cause said leading end portion to become coiled around and attached to said takeup reel.

4,620,679

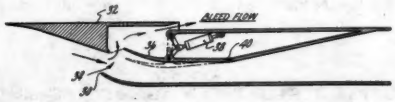
VARIABLE-GEOMETRY INLET

Arthur J. Karanian, Wethersfield, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Aug. 2, 1984, Ser. No. 637,194

Int. Cl.[4] B64D *33/02*

U.S. Cl. 244—53 B **2 Claims**



1. A supersonic air inlet designed to be operational solely when in the supersonic envelope of the flight envelope for a high speed air breathing powered vehicle including a two dimensional duct capable of flowing air at Mach numbers over 1, a variable ramp section for reducing the area of the throat of the inlet at high Mach numbers and an educated slot adjacent the variable ramp, the variable ramp disposed downstream of the educated slot consisting of a single flat like aerodynamically shaped body pivotally mounted to more laterally with respect to the air flowing in said ramp, said two dimensional duct having an upstream wall fixed relative to said vehicle defining a surface for the flowing air protruding further into the airstream than the surface of said ramp and means for positioning said body to reduce the throat area so that in combination with said educated slot formed in said inlet transverse

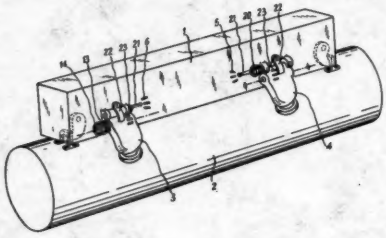
to said air flowing in said inlet at the upstream end of said body, is modified to a slot.

4,620,680

DEVICE FOR CARRYING AND EJECTING UNDER AIRCRAFT LOADS, COMPRISING SUPPORT ARMS POSITIONED WITH RESPECT TO THE DIAMETER OF THE LOADS

Jean Hasquenoph, deceased, late of Lagny sur Marne (by Simone Hasquenoph, legal representative), and Pierre F. Coutin, Paris, both of France, assignors to R. Alkan & Cie, France

Filed Nov. 28, 1984, Ser. No. 675,781
Claims priority, application France, Nov. 30, 1983, 83 19141
Int. Cl.[4] B64C *1/02*
U.S. Cl. 244—137 A **5 Claims**



1. A device for carrying under an aircraft and ejecting loads having suspension rings suspended from hooks, which comprises:

(a) pivotable hooks coacting with suspension rings of the load, said hooks being movable between a lowered position and a raised position,

(b) at least one pair of pivoting support arms hinged on both sides of a support about longitudinal axes, said pivoting support arms being adapted to take a lowered position in which they engage the upper surface of the load to ensure the securing thereof,

(c) spring means associated with said pivoting support arms for urging said arms in a raised position,

(d) rotating cam-shaped members each associated with a pivoting support arm of said pair, each cam-shaped member comprising stepped parts at increasing distances from its axis, and

(e) a retention butt provided in each pivoting support arm, and retention butt selectively bearing on one of the stepped parts of the cam-shaped member, according to the diameter range of the load, to limit the raising of said arms when the hooks to which the load is suspended are moved in their raised positions.

4,620,681

APPARATUS FOR RECEIVING EMPTY BEVERAGE CANS

Ellis J. Staley, III, 305 Parkview Dr., Schenectady, N.Y. 12303, and John G. Walsh, III, 291 Woodlawn Ave., Albany, N.Y. 12208

Filed Jan. 18, 1984, Ser. No. 571,783
Int. Cl.[4] B65B *67/12*
U.S. Cl. 248—95 **13 Claims**

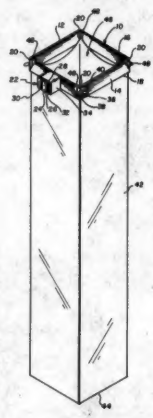
1. An improved device for holding open the mouth of a bag of the type comprising a plurality of closure bands positioned around the periphery of its mouth and for supporting the bag during filling, said device comprising:

a substantially rigid annular member separate from the bag;

means integral with said member for gripping the closure bands of such a bag at spaced locations around said annular member while said bag is supported beneath said annular member;

means operatively associated with said annular member for permitting said annular member to be mounted to a support; and

wherein said annular member comprises a plurality of corners; and said means for gripping comprises a downwardly curved essentially U-shaped slit extending through the thickness of said annular member on each side of a



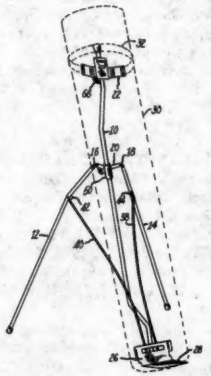
plurality of said corners corresponding in number to the number of closure bands of such a bag, whereby each closure band may be drawn over the upper surface of said annular member and slipped into and upward within one of said slits to cause ends of said slits to grip the closure bands on each side of said corners.

4,620,682

GOLF BAG STAND

Byung D. Yim, 21 French Creek Dr., Rochester, N.Y. 14618

Filed Jan. 16, 1986, Ser. No. 820,474
Int. Cl.[4] A63B *55/00*
U.S. Cl. 248—96 **5 Claims**



1. In a stand for a golf bag or the like having a shaft to which the bag is secured, legs pivotally mounted to the shaft to form a tripod with the shaft, and a U-shaped spring having spring arms forming the bottom of the U-shape of the spring at one end and each arm connected to a different one of said legs at the opposite end thereof, said spring being moveably mounted

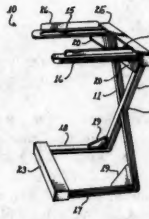
on said shaft near said opposite end, the improvement comprising a collar moveably mounted on said shaft, means for selectively fixing said collar to said shaft at at least a first and a second position where the bottom of said spring projects substantially beyond the end of said shaft and where the bottom of said spring does not project substantially beyond the said shaft, respectively, whereby to prevent said spring from automatically extending said legs to form said tripod when said shaft and the bottom of said spring is placed in contact with the ground or other support surface.

4,620,683

APPARATUS FOR SUPPORTING A FLEXIBLE CONTAINER IN AN OPEN POSITION

Susan D. Claydon, and Howard F. Claydon, both of Boulder, Colo., assignors to Elmer Ferdon, Berthoud, Colo.

Filed Dec. 3, 1984, Ser. No. 677,498
Int. Cl.[4] F16M *11/38*
U.S. Cl. 248—97 **5 Claims**



1. Apparatus for supporting flexible containers of the type having spaced hand-grippable openings in their upper peripheral region, said apparatus comprising:

(a) first and second elevating legs each having first and second ends and containing a receiving notch located therebetween, said legs mutually receiving said notches in a region between said first and second ends and being angularly disposed in a fixed position;

(b) first and second support means affixed to the first end of the corresponding elevating leg and extending outwardly therefrom for engaging a support surface;

(c) basal retaining means connected between said first and second support means for limiting lateral movement therebetween;

(d) first and second spaced parallel extensions affixed to the second ends of the corresponding elevating legs and extending outwardly therefrom in the direction of the support means, said extensions having an upper surface; and

(e) first and second engaging means affixed on the upper surface of the corresponding one of said extensions for removably receiving the hand-grippable portions of a flexible container located therebetween and detachably depending therefrom.

4,620,684

SUPPORT BRACKET ASSEMBLY

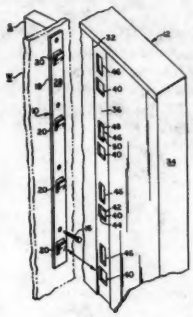
Michael J. Delpercio, Fenton, and Charlie R. Holland, St. Louis, both of Mo., assignors to Coin Acceptors, Inc., St. Louis, Mo.

Filed Dec. 28, 1984, Ser. No. 687,521
Int. Cl.[4] E04G *5/06*
U.S. Cl. 248—225.2 **9 Claims**

1. A support bracket and cabinet assembly comprising:

(a) cabinet including a rear wall having a plurality of vertically spaced openings in a single sole, substantially central row, each opening having an upper support portion,

(b) a single, sole wall-attachable bracket having a plurality of fastener-receiving openings, said sole bracket including an elongate bar member having a front face, and a plurality of outstanding vertically spaced lug members attached to the bar member and each lug member being operatively removably receivable into an associated cabinet wall opening, at least one of lug members having a bearing



portion receiving a support portion of one of said cabinet openings in bearing relation, and

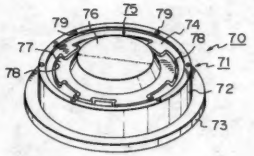
(c) a plurality of fasteners received by the bracket openings.

4,620,685

ROTATING MECHANISM ATTACHABLE TO BOTTOM OF CONTAINER

Haruyoshi Taguchi, Osaka, Japan, assignor to Suntory Limited, Osaka, Japan

Filed Jul. 17, 1984, Ser. No. 631,719
Claims priority, application Japan, Nov. 11, 1983, 58-174433[U]; Nov. 15, 1983, 58-176087[U]; Nov. 22, 1983, 58-180625[U]; Dec. 1, 1983, 58-186066[U]; Jan. 20, 1984, 59-5344[U]
Int. Cl.[4] A47B *91/00*
U.S. Cl. 248—349 **5 Claims**



1. A rotating mechanism attachable to the bottom of a container comprising:

(A) a base member composed of (i) a circular side wall provided with means for preventing the base member from becoming detached from an attachment member after the attachment thereof to the bottom of a container and (ii) a base plate provided at the bottom portion of the circular side wall; and

(B) the attachment member composed of (i) a peripheral support portion having an outer diameter smaller than an inner diameter of the circular side wall and (ii) an attachment plate, the bottom portion of the circular side wall of the base member being connected to the peripheral support portion at connecting portions thereof in such a manner that both portions are readily mechanically separable from each other,

(C) wherein said means for preventing the detachment of the base member comprises (i) a rim having an irregular inner contour with an axis asymmetrical shape and inwardly projected from the upper portion of the inside wall of the circular side wall and (ii) the peripheral support portion of the attachment member having a periphery contour such

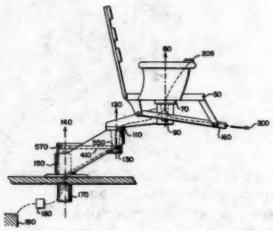
that it is matched with the irregular inner contour of the rim with a small clearance.

4,620,686

SPORTFISHING FIGHTING CHAIR

Richard W. Conant, West Southport, Me., assignor to Warrior Yachts, Inc., Hobe Sound, Fla.

Filed Oct. 29, 1984, Ser. No. 666,045
Int. Cl.[4] F16M *13/00*
U.S. Cl. 248—415 18 Claims



2. An articulted seat pedestal including a base and having an articulated support, comprising:

a seat

a first arm and a pivot having a vertical axis, said first arm and said pedestal base being connected to said pivot; and

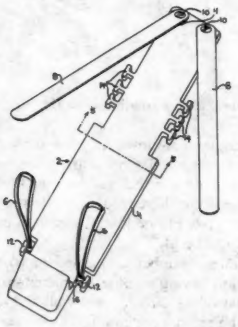
means for extending rotation radius of said seat along a selected variable radius arcuate path connected to said first arm and said seat.

4,620,687

UNIVERSALLY POSITIONABLE BOOK HOLDER

John A. Bishop, Suite 4P, 343 E. 30th St., New York, N.Y. 10016

Filed Dec. 9, 1983, Ser. No. 559,737
Int. Cl.[4] A47B *97/04*
U.S. Cl. 248—447.2 6 Claims



1. A universally positionable book holder comprising

a selectively shaped back plate having a frontal lip at its lower portion, projecting peg means extending from a lower portion of said back plate, a plurality of spaced projecting peg means extending from and along an upper portion of said back plate;

hold-down means in the form of stays pivotably mounted near the top of said back plate;

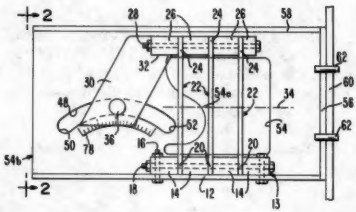
attachment means on the back of said back plate for attachment to support means.

4,620,688

ENERGY ABSORBING APPARATUS FOR PIPING SYSTEM AND THE LIKE

Mohamed Z. Khlafallah, Concord, and Hong M. Lee, Richmond, both of Calif., assignors to Bechtel International Corporation, San Francisco, Calif.

Filed Jan. 6, 1984, Ser. No. 568,861
Int. Cl.[4] F16L *3/20*
U.S. Cl. 248—542 14 Claims



10. Apparatus for absorbing the energy embodied in a moving structural element of a structural system comprising:

a support;

a number of elongated plate-like energy absorbing members;

first spacer means mounting first ends of the members directly to the support with the members extending outwardly in cantilever fashion from the support in generally parallel planes, each member having a central part which is smaller in width than the outer end parts thereof and a pair of opposed side marginal edges on each side, respectively, of the central part thereof, the side edges on a respective side of the central part being convergent toward the central part, the central parts of the members being generally aligned with each other, the major portion of the space between each pair of adjacent members being free of structure;

second spacer means at the outer free ends of the members for coupling said outer free ends to each other, whereby the outer free ends can move together when a lateral force is exerted thereon;

an arm secured to said second spacer means and extending outwardly therefrom at an angle with respect thereto, the outer end of the arm being generally aligned with the central parts of the members;

a rod extending through the arm and projecting outwardly from the arm is opposed directions;

means coupled with the rod for pivotally connecting the arm to the structural element of said structural system to be controlled; and

a housing coupled with the support for containing said members, said first spacer means, said second spacer means and said arm.

4,620,689

HYDRAULIC CONCENTRATOR

Edward J. Pierce, P.O. Box 506, Morro Bay, Calif. 93442

Division of Ser. No. 573,056, Jan. 23, 1984, Pat. No. 4,529,508. This application May 3, 1985, Ser. No. 730,758
Int. Cl.[4] F16L *55/14*
U.S. Cl. 251—7 3 Claims

1. Valve apparatus for use on a reciprocating member that executes, relative to a stationary member, a cycle of motion between two extreme positions, for discharging a liquid only during that part of the cycle of motion when the reciprocating member is near one of its extreme positions, said valve apparatus comprising in combination:

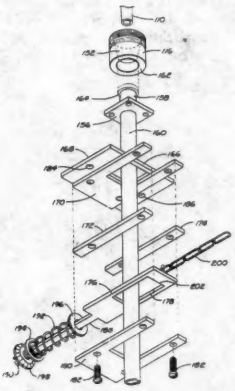
two plates mounted to the reciprocating member in spaced relationship and parallel to each other, each plate having a restraining edge, the restraining edges being parallel;

a third plate slidably mounted in the space between said two

plates, and slidable in the direction of motion, and including an aperture that extends beyond the restraining edges of said two plates;

a resilient tube extending in a direction perpendicular to the direction of motion and extending through the aperture in said third plate, so that the restraining edges of said two plates substantially touch one side of said resilient tube and an edge of the aperture is situated on the opposite side of said resilient tube;

preloading means mounted on the reciprocating member and connected to said third plate to yieldably bias said



edge of the aperture against said resilient tube with sufficient preloading force to close off said resilient tube between the edge of the aperture and the restraining edges of said two plates; and,

releasing means connecting said third plate to the stationary member and, during a portion of the cycle of motion including an extreme position, acting upon said third plate in a direction opposite the preloading force to overcome said preloading force and thereby to permit said resilient tube to assume its normal shape, whereby the liquid is discharged through said resilient tube only during that portion of the cycle of motion.

4,620,690

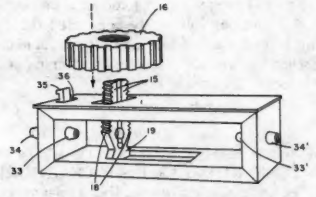
MODULAR FLOW CONTROL CASSETTE

Dean L. Kamen, Bedford, N.H., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 336,068, Dec. 31, 1981, Pat. No. 4,410,164. This application Mar. 28, 1983, Ser. No. 479,328

Int. Cl.[4] F14L *55/14*

U.S. Cl. 251—8 **20 Claims**



1. A valve for controlling the flow of fluid, such valve comprising:

a sheet of material having an inlet nipple and an outlet nipple integrally formed therein for receiving the ends of sections of a flow tube;

flow means, including an elastic tube, for permitting flow of fluid through the inlet nipple in the sheet and then through the outlet nipple in the sheet;

compression means, mounted on the sheet at the base thereof, for compressing the elastic tube to a desired extent and thus controlling fluid flow through the flow means, the compression means including mating threaded members;

an advanceable nut with a bore therethrough; and

a plurality of coplanar, spaced apart arms in hinged connection at their base, the arms having a space for passage of the elastic tube transversely therebetween, and together having an external profile for mating with the nut so that advancement of the nut compresses the arms to adjust the spacing therebetween.

4,620,691

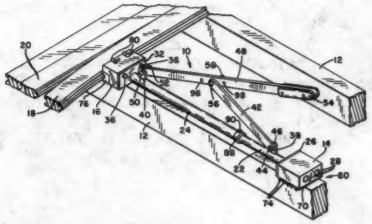
BOARD STRAIGHTENING DEVICE

Lloyd E. Waters, Jr., 951 Rogue River Ave., Grants Pass, Oreg. 97527

Filed May 16, 1985, Ser. No. 734,913

Int. Cl.[4] A47G *27/04*

U.S. Cl. 254—16 **3 Claims**



1. A device for the straightening of boards, to include siding, decking, and overhead boards being attached in parallel to joists, studs, rafters or other supporting members, which comprises:

(a) a head member to physically contact and push against a crooked board so as to straighten it prior to final attachment to joists, studs, rafters or other supporting members; the said head member comprising both a head and a head attachment, the said head accepting for connection thereto various individual head attachments, said head attachments including configurations to match straight boards, larger tongue and groove boards, and smaller tongue and groove boards, so that various sizes and types of boards, particularly tongue and groove boards, can be straightened with minimum physical damage to the board themselves.

(b) a foot member, which includes means for fixing the said foot member on a supporting board, such as a joist, stud, rafter; the said foot member including a cleated surface.

(c) means for increasing the distance between the said head member and said foot member, wherein the said increase in distance, with the said foot member being fixed in position, will press the said head member against a crooked board to straighten it prior to its final attachment in place; the said means for increasing the distance between the said head member and the said foot member including:

a tubular member attached to the said head member and a tubular member attached to the said foot member, the two (2) tubular members being so designed that one said tubular member will fit and move concentrically within the other said tubular member, the inside radius of the outer tubular member being slightly greater than the outside radius of the inner tubular member, the said inner tubular member being either solid or hollow in form;

a shorter lever arm, attached pivotally at one end to one said

tubular member near that tubular member's said attached foot or head member;

a longer lever arm, attached pivotally at one end to the other said tubular member near that tubular member's said attached head or foot member;

wherein the said shorter lever arm has its other end attached pivotally to the said longer lever arm at a position near the approximate center of the longer lever arm, so that force exerted on the free end of the longer lever generally toward the device will provide causation, through the lever arrangement with the said foot member fixed in place, for the said head member to displace away from the said fixed foot member;

the said pivotal point of attachment of the said shorter lever arm to the said longer lever arm being made variable by the provision of a multiple number of pivotal attachment points on the said longer lever arm, so that the leverage obtained from the device and the resulting displacement of the head can be varied as desired by the user; and,

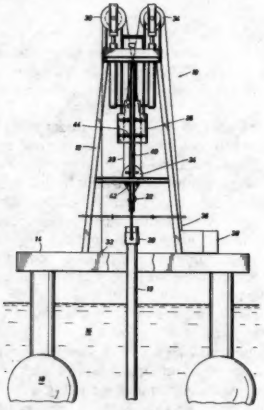
a collar placed about the said inner tubular member, said collar being capable of being fixed at any location on said inner tubular member, so as to restrict the concentric movement of the outer tubular member thereupon, said restriction serving to the reduce the potential displacement and to limit the lever movement to within that range where the greater leverage is available.

4,620,692

CROWN BLOCK COMPENSATOR

Fred R. Foreman, London, England, and Douglas W. J. Nayler, Mission Viejo, Calif., assignors to NL Industries, Inc., New York, N.Y.

Filed Oct. 31, 1984, Ser. No. 666,874
Int. Cl.[4] E21B *19/09*
U.S. Cl. 254—277 **22 Claims**



1. Compensator apparatus comprising:

a. first and second fluid pressure apparatus, wherein each fluid pressure apparatus includes first and second mutually reciprocable bodies, and means associated with both fluid pressure apparatus for applying fluid pressure between said bodies tending to coincidentally reciprocate said bodies in a first directional mode, said first bodies being fixed relative to a first object;

b. means for connecting said second bodies with a second object so that parallel, proportional reciprocable motion between said first and second bodies accompanies relative motion between said first and second objects;

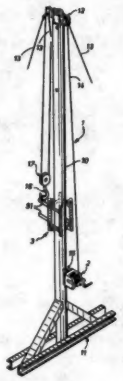
c. means for connecting said second object with a third object depending therefrom by such means whereby said third object is selectively movable relative to said second object independent of said reciprocable motion between said first and second bodies and wherein said relative motion between said first and second objects may be accompanied by like motion between said third object and said first object, said third object remaining relatively stationary with respect to said second object.

4,620,693

POLE LIFTING APPARATUS

Jacques Vialars; Alain Rossignol, both of Auch; André Vidal, Mirande, and Lionel Sarrade, Auch, all of France, assignors to Electricite de France, Paris, France

Filed Jul. 19, 1984, Ser. No. 632,591
Claims priority, application France, Jul. 19, 1983, 83 11899
Int. Cl.[4] B66D *3/00*
U.S. Cl. 254—335 **3 Claims**



1. Apparatus for lifting a line pole or other post, said apparatus comprising a telescopic mast including a base for bearing on the ground, and one mast section mounted for sliding movement inside another mast section between extended and retracted positions, a hoist, means for mounting said hoist on said other mast section, one end of a rope being fixed to said hoist, said rope having a path extending from said hoist over direction change means at the upper end of said mast, through a lifting implement, and back to the upper end of said mast where the other end of said rope is anchored, said lifting implement being adapted to raise a line pole, a carriage removably mounted on said mast, means for releasably connecting said carriage to said lifting implement, said carriage including guide means for raising and lowering movement along said mast, said carriage having means for mounting a power tool for driving in a ground rod or stake, said removable carriage comprising first and second parts pivotally connected together and surrounding said mast and wherein said removable carriage comprises means for releasably securing said first and second parts of said removable carriage together.

4,620,694

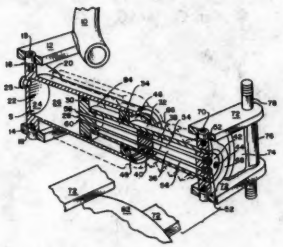
HYDRAULIC SUSPENSION SYSTEM FOR VEHICLES INCLUDING ADJUSTABLE SHOCK ABSORBER UNIT

Ray T. Padgett, Cobb County, Ga., assignor to Patrick F. Henry, Atlanta and William G. Ness, Powder Springs, both of, Ga.

Filed Jun. 30, 1980, Ser. No. 164,226
Int. Cl.[4] F16F *9/44*
U.S. Cl. 267—64.15 **15 Claims**

1. In a suspension system shock absorber unit having separately a main first, second, third and fourth chambers, said first,

second and fourth chambers having a suitable hydraulic fluid therein and said third chamber being selectively provided with a gas such as air introduced under pressure, a main piston operable in said first and fourth chambers to define same, and at times to decrease the volume in the first main chamber, a free piston movable and operable to separate and define said second and third chambers, a main piston rod for moving said main piston and having the second and third chambers defined by the free piston therein, each of the first, second and third chambers being of variable volume and said first and second and fourth chambers being selectively in communication whereby under equilibrium condition the pressures in said first, second and fourth chambers are equal to each other and are equal to the pressure in the third chamber except for any resistance of said free piston which causes a slight difference in pressure between one chamber and another, said first main piston being operable by said piston rod movement to decrease the volume in the first main chamber into the second chamber whereby the separate chamber arrangements change volumes in all chambers and ultimately restore the unit to equilibrium after encountering conditions which moderately increase the compressive load on the unit, a second valve for upward stroke



damping in the main piston between the first and second chambers, a third, one-way valve operable between and second and first chambers, a fourth valve operable between the second chamber and the fourth chamber, said fourth valve comprising four passages including a passage allowing uninterrupted free flow path from the second chamber to the fourth chamber whereby the increased volume in the second chamber is accommodated by movement of the free piston thereby decreasing the volume in the third chamber resulting in increased pressure in the third chamber, and another one-way valve part of the fourth valve and when closed allowing only a restricted flow path between the fourth chamber and the second chamber, so that the speed of movement of the main piston is restricted by the rate at which hydraulic fluid in the fourth chamber is permitted to flow through the fourth valve in the main piston to the second chamber, whereby with the pressure in the fourth chamber being greater than the pressure in the second chamber restricted flow of fluid occurs from the fourth chamber to the second chamber and the other one-way valve is closed; and with the pressure in the second chamber being greater than the pressure in the fourth chamber the one-way valve is open and fluid flows freely therethrough from the second chamber to the fourth chamber.

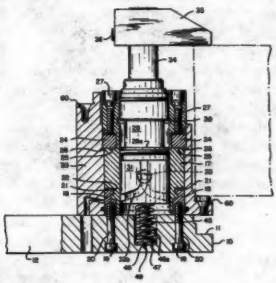
4,620,695

POWER CLAMPING APPARATUS

David M. Vanistendael, Washington, Pa., assignor to Davan Industries, Washington, Pa.

Filed Aug. 28, 1984, Ser. No. 644,990
Int. Cl.[4] B23Q *3/08*
U.S. Cl. 269—24 **25 Claims**

1. A power clamp assembly comprising a base member having a periphery of generally circular shape, fastening means on said base for fastening said base to a machine, a central pivot point on said base, a ball rotatable in said pivot point, a hydraulic cylinder on said base around said pivot point spaced from the periphery of the base, retaining means on said base engaging said cylinder to permit rotation of said cylinder relatively to the base while holding said cylinder against removal, a piston movable axially in said hydraulic cylinder, a hollow rod of fixed length in said piston having one end extending out of said piston and axially adjustable with respect thereto, first locking means in said hollow rod engaging the piston to releasably lock said rod in the piston at a selected point on said rod, a radially extending clamping arm on said rod outside the piston, guide means between said cylinder and piston acting on the piston to rotate the piston around its axis as it reaches the



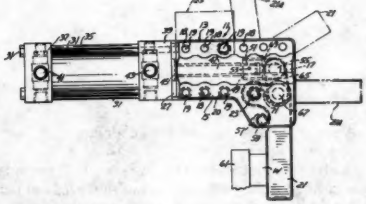
extent of its movement out of the cylinder, a generally cylindrical body surrounding the hydraulic cylinder and extending from the base to a point intermediate the length of said cylinder and rotatable therearound, second locking means on the cylinder for holding the body against the base to prevent relative rotation thereof, said body being spaced from the outer periphery of the base to provide a radial support flange on the base extending outwardly from the body, at least one radial projection on said body engaging said flange at a portion adjacent the flange and having a support face on the opposite end substantially parallel to said flange and inlet means on said cylinder for receiving hydraulic fluid from a source thereof.

4,620,696

POWER CLAMP

Leland F. Blatt, P.O. Box 220, Fraser, Mich. 48026

Filed Aug. 10, 1983, Ser. No. 521,696
The portion of the term of this patent subsequent to Jan. 29, 2002, has been disclaimed.
Int. Cl.[4] B23Q *3/08*
U.S. Cl. 269—32 **6 Claims**



1. In a power operated clamp for securing a workpiece relative to a workpiece support, including a cylinder having a reciprocal piston and connected piston rod projecting from said cylinder; a hollow clamp body axially aligned with and connected to said cylinder and mounted upon a first support; said body being open at its top, bottom and front and including

a pair of opposed spaced side plates with their one ends outturned and secured to said cylinder; said piston rod extending into said body between said side plates; a pivot bolt extending between forward portions of said side plates and secured thereto; a clamp arm at one end pivotally mounted upon said pivot bolt and in one position adapted to retainingly engage a workpiece relative to said workpiece support; and a pair of links at their one ends bearing against opposite sides of said clamp arm and pivotally connected thereto;

the improvement comprising;

a series of vertically spaced pairs of longitudinally spaced mounting holes extending through rearward portions of said side plates adjacent their tops and bottoms;

and a plurality of opposed additional longitudinally spaced mounting holes extending through forward portions of said side plates adjacent their tops;

apertured spacers interposed between said side plates;

a plurality of pivot bolts extending through some of said side plate mounting holes and spacers interconnecting said side plates;

said side plates upon their interiors having a pair of opposed longitudinally extending guide slots therein;

a rod end between said side plates spaced from said cylinder and axially connected to said piston rod;

a pivot slide pin supportably extending transversely through said rod end and at its ends slidably mounted within said side plate slots, constraining said rod to reciprocal rectilinear movements;

said pair of links at their other ends being pivotally connected to said slide pin;

and an eccentric rotatably adjustable pre-stop on one of said pivot bolts spanning and secured to said side plates in registry with, spaced from and aligned with said clamp arm;

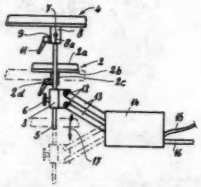
adapted for retaining engagement with said clamp arm when moved to workpiece retaining position, said eccentric pre-stop being rotatably adjustable to eliminate any variation in the clamp arm due to loose linkage and for taking up any wear in order to maintain said clamp arm in a stationary, non-shake position.

4,620,697

SURGICAL HEADREST

Francois Pithon, 8, allee de la Mediterranee, Roanne (Loire), France

Filed Dec. 7, 1984, Ser. No. 679,463
Int. Cl.[4] A61G *13/00*
U.S. Cl. 269—328 **7 Claims**



1. A surgical head support device, comprising:

a support;

a headrest mounted on said support and provided with means for enabling adjustment of the level and inclination of said headrest relative to said support;

a handrest mounted on said support and extending arcuately at least in part around said headrest and substantially coaxially therewith;

adjustment means for setting inclination and level of said handrest independently of said headrest relative to said support whereby said handrest is positionable above or below said headrest and partly surrounds the head of a patient without blocking access to portions at which surgery may be performed; and

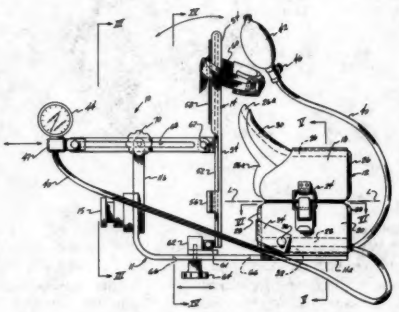
a motor having a pair of parallel arms extending therefrom in a vertical plane and adapted to swing said arms in said plane, said support being formed with a pair of vertically spaced parallel horizontal axes, said arms being pivotally connected to said support at said axes whereby said support is displaceable vertically parallel to itself on said arms.

4,620,698

ORTHOPEDIC SUPPORT DEVICE

Albert D. Reed, Greenwood, S.C., and Paul E. Sottak, Laconia, N.H., assignors to Professional Medical Products, Inc., Greenwood, S.C.

Filed Mar. 4, 1985, Ser. No. 707,886
Int. Cl.[4] A61G *13/00*
U.S. Cl. 269—328 **9 Claims**



1. An orthopedic device to position and retain the lower portion of the leg and foot of the human body when the leg is placed in an extended position under traction during orthopedic operatory procedures, comprising:

a rigid support bracket;

tubular-shaped cuff means attached to the support bracket for surrounding and grippingly retaining the lower leg of the body adjacent the ankle, said cuff means including fluid-activated means for varying the size of the internal opening through the tubular-shaped cuff means to adjustably grip and retain the lower leg of the body;

foot-positioning means mounted on said support bracket in spaced relation to said cuff means for positioning the foot when the lower leg is located in said cuff means, said foot-positioning means including a plantar plate extending generally transverse to the longitudinal axis of the tubular-shaped cuff means for receiving the sole of the foot, means attaching a heel-receiving portion of the plate to said support bracket for adjustable linear positioning of the heel-receiving portion toward and away from said cuff means along a line generally parallel to the longitudinal axis of the cuff means, means attaching a central portion of the plantar plate to the support bracket for adjustable positioning of the central portion linearly generally parallel to the longitudinal axis of the cuff means;

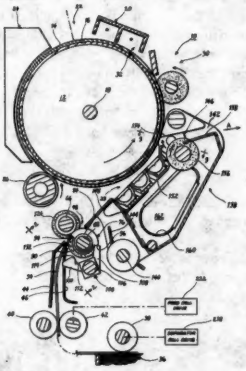
and means on the bracket for supportably connecting the bracket to a force-applying member of an orthopedic table.

4,620,699

COPY SHEET REGISTRATION ASSEMBLY FOR ELECTROPHOTOGRAPHIC COPIER

Benzion Landa, Edmonton, Canada; Oded Sagiv, Ramat-Gan, and Nathan A. Levy, Ra'anana, both of Israel, assignors to Savin Corporation, Stamford, Conn.

Filed Jul. 6, 1984, Ser. No. 628,611
Int. Cl.[4] B65H 9/06
U.S. Cl. 271—245 12 Claims



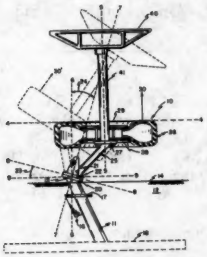
1. Apparatus for deforming an edge portion of a sheet including in combination a rotatably supported anvil, a hammer carried by said anvil for movement in the direction thereof, said hammer and said anvil being rotatable to a sheet-receiving position for movement of said edge portion therebetween and having surface portions adapted to crimp said edge portion upon movement of said hammer toward said anvil, a deflector disposed along the path swept by said hammer in the course of rotation of said anvil, said deflector being adapted to drive said hammer toward said anvil upon rotation of said anvil from said sheet-receiving position, and means for rotating said anvil from said sheet-receiving position to cause said deflector to drive said hammer toward said anvil to deform said portion of said sheet.

4,620,700

OCCUPANT PROPELLED ROUNDABOUT

La Vere Snarr, 7071 S. 300 East, Midvale, Utah 84047

Filed Feb. 19, 1985, Ser. No. 703,188
Int. Cl.[4] A63G 1/12
U.S. Cl. 272—33 R 13 Claims



1. A ground mounted, occupant propelled, roundabout device for developing rotational and oscillating vertical motion for a user, said device comprising:

a. a support base adapted for positioning substantially upright at a fixed location at the ground and having an upper end;

b. a rotatable hub means having a rotational axis and being attached to the upper end of the base such that the rotational axis is inclined with respect to a vertical reference;

c. a support arm attached to a rotating part of the hub means and projecting outward from the rotational axis;

d. a platform having a standing or sitting surface at an upper portion thereof and being attached to the support arm such that the center of mass of the support arm and platform is offset from the rotational axis and the body of the platform is intercepted thereby, said platform being inclined at the standing or sitting surface at an acute angle with respect to the rotational axis;

e. an upstanding support member attached at one end to the platform in substantial perpendicular orientation;

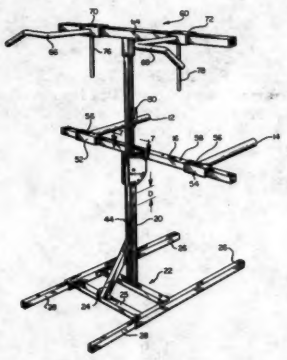
f. gripping means positioned at the upper end of the upstanding member and having a substantial portion of its structure on an opposing side of the rotational axis from the platform to enable the user to partially counter-balance user weight against the weight of the platform and to enable the user to shift weight to propel the roundabout in rotational motion.

4,620,701

ADJUSTABLE EXERCISE APPARATUS

Daniel R. Mojden, 5519 S. Garfield, Hinsdale, Ill. 60521

Filed Aug. 20, 1984, Ser. No. 642,528
Int. Cl.[4] A63B 23/00, 1/00
U.S. Cl. 272—63 17 Claims

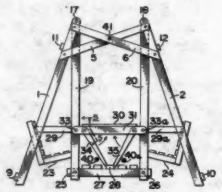


8. An adjustable dip bar exercise apparatus comprising, in combination, base means, vertically extending mediate support structure connected to the base means, bar means disposed substantially horizontally, at least two handle members, each handle member extending outwardly from the bar means in a cantilevered arrangement and oriented substantially parallel to the other handle member, and vertical angle adjusting means connected to the mediate support structure and to the bar means, said vertical angle adjusting means including a bracket member connected to said vertically extending mediate support structure and including means for fixedly retaining said bracket member in a selected angular position such that said bar means and handle members may be supported in any one of a plurality of angular positions spaced apart and generally parallel to one another in respective vertical planes.

4,620,702
MODIFIED GARDEN SWING WITH STABILIZER

George T. Hemmeter, 4125 Black Point Rd., Honolulu, Hi. 90816

Filed Jun. 18, 1985, Ser. No. 746,134
Int. Cl.[4] A47B *39/00*
U.S. Cl. 272—85 3 Claims

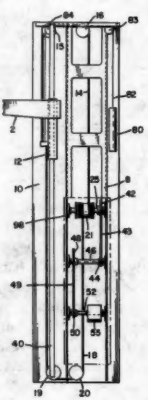


1. A swing consisting basically of a rigid frame for supporting a swinging mass, said mass formed by two sets of vertical hangers, the distance between members of each set of vertical hangers are equa-distance, and like members of each set are equa-distance from each other at their upper extremities at which locations they are pivotably mounted on said rigid frame, and the lower extremity of each of said hangers are pivotably mounted on a horizontal platform so all four hangers are parallel even when displaced by swinging of the mass; mounted on each set of vertical hangers is a chair facing each other, and on one side of each set of hangers on the same side of the swing is a cross member located approximately at chair height, pivotably mounted at both ends of said cross member and connected to one vertical hanger of each set on the same side of the swing to form a parallelogram consisting of one hanger from both sets on the same side of the swing, the said platform and said cross member; pivotably connected to said cross member is a strut that when folded downward in contact with said platform, said strut prevents said mass from swinging.

4,620,703
EXERCISE APPARATUS

Paul M. Greenhut, 4581 Sequoia Dr., Harrisburg, Pa. 17109

Filed Oct. 12, 1984, Ser. No. 660,526
Int. Cl.[4] A63B *21/24*
U.S. Cl. 272—129 8 Claims



1. Exercise apparatus, comprising:

a traveler assembly having operating means for engagement by a user;

means mounting said traveler assembly for bidirectional movement in opposite directions;

at least one tensioning means connected to said traveler assembly;

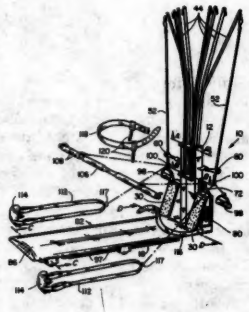
at least two cable means connected to said tensioning means and thereafter to a drum means, such that movement of the traveler assembly will cause one of said cable means to wind onto said drum means and the remaining cable means to unwind from said drum means wherein said tensioning means provides said cable means with a self adjusting amount of tension and slack for eliminating binding of said cable means as a result of uneven winding and unwinding of said cable means on said drum; and

an adjustable magnetic particle braking means connected to said drum means for providing continuously uniform resistance to movement of said drum means and thereby said traveler assembly through the full range of movement of said traveler assembly.

4,620,704
UNIVERSAL EXERCISING MACHINE

Tessema Shifferaw, 2048 McAllister St., San Francisco, Calif. 94118

Filed Apr. 27, 1984, Ser. No. 604,948
Int. Cl.[4] A63B *21/02*
U.S. Cl. 272—135 26 Claims



1. In an exercising machine: a base, a plurality of resilient rods mounted on the base in cantilevered fashion with one end of each rod being secured in a fixed position and the other end being free, a cable upon which an axial pull is exerted by a person using the machine, means for connecting the cable to the free end of at least one of the resilient rods, and guide means for the cable mounted on the base in a predetermined position relative to the fixed ends of the rods so that the pull on the cable causes the rods to flex and resist the pull in a predetermined manner regardless of the direction from which the pull is applied.

4,620,705
RACKET STRINGING DEVICE

Akira Tsuchida, Higashikurume, Japan, assignor to Asics Corporation, Osaka, Japan

Filed Mar. 26, 1985, Ser. No. 716,376
Claims priority, application Japan, Mar. 26, 1984, 59-56286
Int. Cl.[4] A63B *51/14*
U.S. Cl. 273—73 A 6 Claims

1. A racket stringing device, comprising:

a base;

a slide plate slidably mounted on said base for movement in a direction;

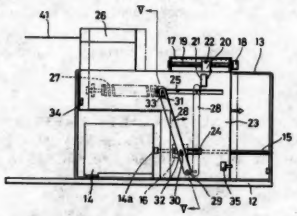
a reversible motor;

a threaded screw fixedly coupled to said reversible motor for being reversably rotated thereby;

a string clamping means, fixedly mounted on said slide plate, for clampingly receiving a string to be strung on a racket;

a lever having one end pivotally mounted on said slide plate, said slide plate being formed with first and second slots extending in said direction, said lever being formed with third and fourth slots;

means, fixed to said lever, for threadably engaging said threaded screw;



a first pin extending through said first slot and said third slot and a second pin extending through said second slot and said fourth slot so as to loosely couple said lever to said slide plate at said first and second slots; and

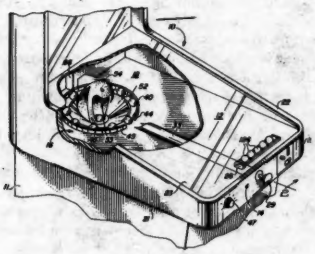
spring means, having one end secured to said slide plate and another end secured to the other end of said lever, for elastically connecting said other end of said lever to said slide plate.

4,620,706

GAME WITH ROTATING TARGET

Olubunmi C. Ijidakinro, 1441 E. Ironwood Dr., Chandler, Ariz. 85225

Filed Oct. 4, 1985, Ser. No. 784,268
Int. Cl.[4] A63D *3/02;* A63B *71/00;* A63F *7/22*
U.S. Cl. 273—122 R **17 Claims**



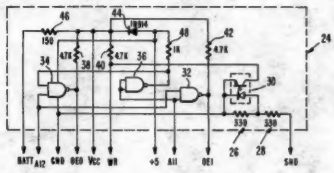
1. An amusement device comprising a base structure having a playing surface; a plurality of target objects; first rotating means mounted in said base structure and having a plurality of seats defined therein for receiving said target objects in an initial static position relative to said rotating means for rotation therewith; second rotating means disposed in rotatable circumscription about said first rotating means and supporting a plurality of barriers spaced on the periphery thereof defining a plurality of gaps therebetween; selective control means operatively associated with and controlling the direction and speed of said first and said second rotating means; a shooter ball; shooter means operatively disposed in spaced facing relationship to said rotating target objects and manually actuable to propel said shooter ball from an at rest position toward one of said rotating target objects to dislodge said object from its static position; collector means collecting said propelled shooter ball and said dislodged target object and returning them to their respective at rest positions; motor means for driving said rotating means; power means for energizing said motor means; and actuator means responsive to a deliberate external act to energize said motor means and place said target objects and said shooter ball in an at-play condition.

4,620,707

NON-VOLATILE REPROGRAMMABLE RAM CARTRIDGE

Louis A. Lippincott, Roebling, N.J., assignor to Syntex Computer Systems, Inc., Bordentown, N.J.

Filed Jun. 27, 1983, Ser. No. 508,111
Int. Cl.[4] A63F *9/22*
U.S. Cl. 273—148 B **4 Claims**



1. A reprogrammable RAM cartridge comprising:

(a) at least one RAM which can store data;

(b) means for preserving the data stored in said RAM; and

(c) circuit means for writing into said RAM which can be activated by placing a signal between two pins on said cartridge which would normally have a voltage potential across them which is less than would be required to enable the write line of said RAM when said cartridge is used in its intended application, said two pins being the shield pin and the ground pin of said cartridge, and said circuit means comprising at least one resistor connected between said shield pin and said ground pin together with means for detecting current flow through said resistor comprising an optoisolator having its LED connected in parallel across said resistor, and the outputs of said optoisolator adapted to bring a write enable line of said RAM to ground, whereby it is possible to enable the write line of said RAM by imposing a voltage between said shield pin and said ground pin.

4,620,708

GOLD PUTT TRAINING APPARATUS

Charles D. Meyer, 6714 Baker La., Sebastopol, Calif. 95472, and Bruce A. Bennett, 15 Chestnut Ave., San Rafael, Calif. 94901

Filed Mar. 22, 1985, Ser. No. 715,112
Int. Cl.[4] A63B *69/36*
U.S. Cl. 273—192 **10 Claims**

1. Collapsible apparatus for training a golfer to putt a ball along a target line, comprising a pair of elongated guide rails having ground engaging pins projecting from first sides thereof and pin receiving sockets in said first sides, said guide rails being movable between a collapsed position in which the rails are juxtaposed with the first sides facing each other and the pins interfitting with the sockets of the opposite rails to hold the rails together and an operating position in which the guide rails are positioned in spaced parallel relation on opposite sides

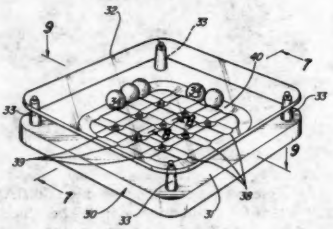
of the target line with the first sides facing in a downward direction and the pins extending into the ground to secure the rails in position, and an axially extensible guide member extending from one end of each of the guide rails for movement between a retracted position relative to the guide rails when the guide rails are in their collapsed position and an extended position when the guide rails are in the operating position.

4,620,709

BOARD GAME AND METHOD

John R. Palladino, Jr., Brighton, Mich., assignor to Game Concepts, Inc., Brighton, Mich.

Filed Apr. 13, 1984, Ser. No. 599,815
Int. Cl.[4] A63F 3/02, 3/06, 9/06
U.S. Cl. 273—264 23 Claims



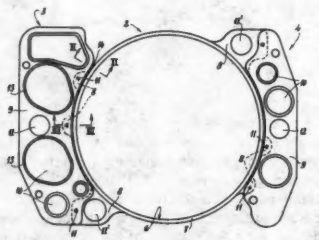
1. A game board including:
(a) a playing surface;
(b) a first plurality of recessed vertical spaced apart pathways on said playing surface;
(c) a second plurality of recessed horizontal spaced apart pathways on said playing surface intersecting said first plurality of pathways; and
(d) a continuous connecting pathway recessed into said playing surface, and connecting all of said first plurality of pathways and said second plurality of pathways at the ends thereof, said recessed continuous connecting pathway performing a storage function and not forming any part of the playing surface, said connecting pathway being more deeply recessed into the face of said game board than said first plurality or said second plurality of pathways.

4,620,710

HEAD GASKET FOR AN INTERNAL-COMBUSTION ENGINE

Georges Lambert, Lyon, and Guy Ferré, Saint-Priest, both of France, assignors to Curty, Saint-Priest, France

Filed Apr. 26, 1985, Ser. No. 727,960
Claims priority, application France, Apr. 26, 1984, 84 06908
Int. Cl.[4] F16J 15/12
U.S. Cl. 277—235 B 11 Claims



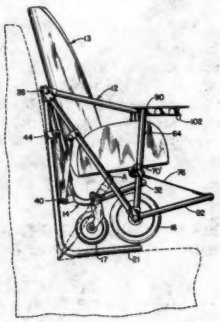
1. An engine-head gasket adapted to be disposed between a cylinder head and a cylinder block for at least one cylinder, comprising:
a principal part formed with a cylinder opening and a fire ring surrounding said opening;
at least two lateral parts flanking said principal part, each of said lateral parts being formed as a plate having a plurality of openings adapted to be traversed by respective liquids, and at least one bore adapted to pass a bolt connecting said head with said block, said openings of said lateral parts being lined with elastomeric sealing ribs molded onto said plates; and
means for fastening said lateral parts to said principal part.

4,620,711

MULTI-FUNCTION CHILD CARRIER

Timber Dick, 4320 Zenobia St., Denver, Colo. 80212

Filed Aug. 1, 1984, Ser. No. 636,845
Int. Cl.[4] B62B 7/08
U.S. Cl. 280—30 20 Claims



1. In a child carrier having a seat-mounting frame and a lower wheel frame assembly depending downwardly from said seat mounting frame, said wheel frame assembly including front and rear wheels supported for downward extension from said wheel frame assembly, and a seat portion disposed on said seat-mounting frame, the improvement comprising:
a handle member normally extending rearwardly of said seat-mounting frame, said handle member terminating in a hand-engaging, angled end portion; and
pivot means pivotally interconnecting said handle member to said seat-mounting frame for pivotal movement of said handle member about a horizontal axis from a first position in which said handle member extends rearwardly of said seat-mounting frame when in a raised position as a stroller to a lowered position in which said handle member is directed downwardly with said angled end portion extending forwardly in spaced relation beneath said wheels to support said carrier on a car seat with said wheels spaced above the car seat.

4,620,712

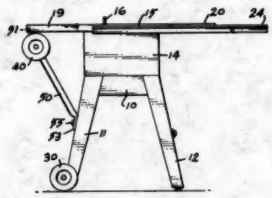
PORTABLE POWER TABLE

Scotty Blackwell, Hattiesburg, Miss., assignor to Jerrine Wilson, Petal, Miss., a part interest

Filed Oct. 22, 1984, Ser. No. 663,120
Int. Cl.[4] B62B 1/00
U.S. Cl. 280—47.2 1 Claim

1. In a power equipment table having a base, first and second sets of leg means extending downwardly and outwardly from the base, power equipment mounted on the base, and table means extending outwardly from the power equipment and providing first and second extension means extending in opposite directions beyond the lateral extent of the base, the im-

provement comprising, means facilitating movement and loading of the table onto a raised platform, said means including first wheel means mounted at the lower end of the first set of leg means at the side of the table having the first extension means, second wheel means mounted just below said first extension means and outwardly thereof and generally above said first wheel means, said second wheel means being



mounted on bracket means having a first end connected to the first extension means and a second end connected to said first set of leg means, and handle means connected to the second set of leg means at the other side of said table from said first and second wheel means and generally below said second extension means and substantially above the lower end of said second set of leg means.

4,620,713

FRONT FENDER OF MOTORCYCLE

Shiro Sakaguchi, Kobe, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo, Japan

Filed Apr. 25, 1984, Ser. No. 603,696

Claims priority, application Japan, Apr. 27, 1983, 58-64582[U]

Int. Cl.[4] B62B *9/16*

U.S. Cl. 280—152.3 **2 Claims**

1. A front fender of a motorcycle, securely connected to front forks for supporting a front wheel at lower ends, comprising:

a front section of an arcuate shape secured to the front forks and provided with an arcuate slot dividing said front section into an upper part and a lower part;

a rear section of a fixed arcuate shape conforming to the shape of said front section and telescopically fitted in said slot in said front section for sliding movement relative to each other;

said rear section and the upper part of said front section being provided with spaced apertures for receiving bolts and the lower part of said front section being provided with threaded recesses to receive bolts passing through said apertures for rigidly securing said front section to said rear section together in various relative positions.

4,620,714

AMBULATORY WHEELSTAND

Daniel W. Davis, 3213 Beechwood St., Flint, Mich. 48506

Filed May 23, 1984, Ser. No. 613,141

Int. Cl.[4] A61H *3/04*; B62M *1/14*

U.S. Cl. 280—242 R **13 Claims**

1. An ambulatory wheelstand comprising:

an elongated frame having a front end and a rear end;

at least one wheel attached to said frame adjacent said rear end;

at least two axially aligned wheels rotatably secured to an axis at a midpoint of said frame, said wheels having an outer circular periphery;

an articulated user support structure, means for pivotally attaching said user support structure to said frame about a pivotal axis, wherein said support structure is normally maintained in a substantially planar position thereby maintaining the user in a substantially erect position and wherein said support structure comprises a planar torso support, a pair of leg supports pivotally attached to the bottom end of said torso support and a foot rest pivotally secured to each leg support;

said pivotal axis being within the outer circular periphery of said aligned wheels and closely adjacent the axis of said aligned wheels so that the distance between the hands of a person supported on said support structure and the outer periphery of said aligned wheels is substantially constant despite the pivotal position of said support structure,

means for adjusting the pivotal position of said user support structure relative to said frame; and

said axially aligned wheels being dimensioned to be manually grasped and rotated by the user from any angular position of said user support structure.

4,620,715

STEERING APPARATUS FOR VEHICLE

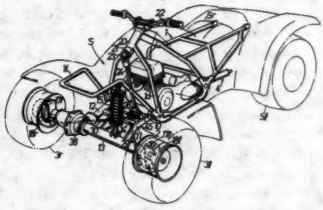
Hirotake Takahashi, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 30, 1985, Ser. No. 728,776

Claims priority, application Japan, May 1, 1984, 59-88125

Int. Cl.[4] B62K *5/08*; B62D *7/00*

U.S. Cl. 280—269 **5 Claims**



1. In a vehicle having a body frame, a front swing frame suspended from a front of the body frame, and right and left

side front wheels journaled to both right and left sides of the swing frame, said swing frame having a base journaled for vertically swinging motion to the body frame via pivot shafts, a steering apparatus comprising a steering linkage coupled to the right and left side front wheels for steering those wheels, a steering shaft leading to a steering handle, and a lower steering joint coupling said steering linkage to a lower end of said steering shaft, wherein a relative position between said pivot shafts and said lower steering joint is set so that a center of said lower steering joint is positioned on a longitudinal axis of said pivot shafts.

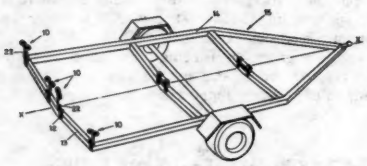
4. A steering apparatus for a vehicle having a body frame, a front swing frame suspended from a front of the body frame and right and left side front wheels journaled to both right and left sides of the swing frame, the swing frame having a base journaled for vertically swinging motion to the body frame via pivot shafts, comprising a steering linkage coupled to the right and left side front wheels for steering those wheels, a steering shaft, a lower steering joint coupling said steering linkage to a lower end of said steering shaft, a steering arm coupled to said steering linkage and a swing shaft supported on the front swing frame, said swing shaft being formed integrally with said steering arm and coupled to said steering shaft through said lower steering joint, said lower steering joint including a first joint half having an outer casing integral with a top portion of said swing shaft, and a second joint half secured to the lower end of said steering shaft and coupled rotatably to said first joint half, said steering arm being extended integrally from an outer periphery of said outer casing.

4,620,716

BOAT GUIDE ROLLER ASSEMBLY

Luigi Carbone, 938-942 Port Road, Woodville West, Australia

Filed Mar. 5, 1985, Ser. No. 708,246
Claims priority, application Australia, Mar. 5, 1984, PG3913
Int. Cl.[4] B60P *3/10*
U.S. Cl. 280—414.1 **6 Claims**



1. A boat guide roller assembly comprising:

a base member having a securing lug securable to the chassis of a boat trailer,

a post, and post pivot means co-operable between the post and base member to guide the post for pivotal movement between a position where it is upstanding from the base member and where it is forward thereof, said movement being about a pivotal axis at the lower end of the post in a direction the major component of which is fore-and-aft,

a rocker arm, and arm pivot means co-operable with the rocker arm and post to guide the rocker arm for pivotal movement about a pivotal axis between its ends and the upper end of the post in a direction the major component of which is transverse,

a pair of rollers spaced from one another and carried on opposite ends of the rocker arm, and

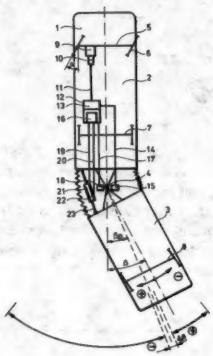
spring means co-acting with the base member and post urging the post to be upstanding from the base member, but being deflected upon downward pivotal movement of the post by a boat upon retrieval thereof thereby imparting upward pressure to the boat.

4,620,717

JACKNIFING-AFFECTING APPARATUS FOR VEHICLES WITH ELECTRONIC CONTROL

József Ivony; Attila Madocsay; István Ratskó; Béla Horváth, all of Budapest, Hungary, and Jenö Mádi, all of Budapest, Hungary, assignors to Autóipari Kutató és Fejlesztö állala and Ikarus Karosszéria éstármügyár, both of Budapest, Hungary

Filed Aug. 24, 1983, Ser. No. 526,134
Claims priority, application Hungary, Aug. 23, 1983, 2752/82
Int. Cl.[4] B62D *53/06*
U.S. Cl. 280—432 **10 Claims**

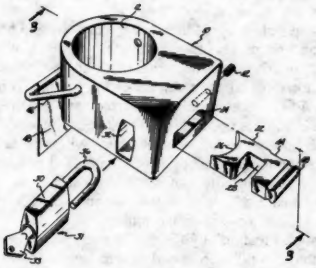


1. In an apparatus for an articulated vehicle with front and trailing parts connected with an articulating hinge, for preventing jackknifing, wherein the front part has steered front wheels, the apparatus having locking means connected to the parts of the vehicle, a sensor for the steered angle of the front wheels of the vehicle, a sensor for the actual angle of articulation and an angular position evaluating unit connected to the locking means and the two sensors, the improvement wherein: the sensor for sensing the steered angle has a movable first element coupled to the steered wheel and a stationary second element, one of the first and second elements being divided into sections starting from the position of the steering to the left, means for producing a discrete signal for each single section referring to its relative position and having a value differing from that of the other sections and means for producing a digital output signal characteristic of a serial number for each section, the sensor for sensing the angle of articulation having a displaceable third element connected to one of this vehicle parts, and a stationary fourth element, wherein one of the third and fourth elements is divided into sections starting from the position of articulation being fully left for producing a digital output signal for each section representative of a serial number and a discrete signal representing the relative position of the section and which has a value which is different from that of the other sections; wherein in the two sensors the angles forming the limit of the sections have identical serial numbers and are formed by the steering angles and the angles of articulation; wherein the angular position evaluating unit has means receptive of the output signals from the two sensors for comparing same and for producing a first output if the serial number of the steering angle section is less than the serial number of the section of the angle of articulation and the difference between the serial numbers is greater than a predetermined value and for producing a second output signal if the serial number of the section of the steering angle is greater than the serial number of the section of the the angle of articulation and the difference between the serial numbers is greater than a predetermined value.

4,620,718
KINGPIN LOCK

Thorwald J. Mickelson, Excelsior, Minn., assignor to Cargo Protectors, Inc., Excelsior, Minn.

Filed Jun. 3, 1985, Ser. No. 740,859
Int. Cl.[4] B60R *25/00*
U.S. Cl. 280—507 **6 Claims**

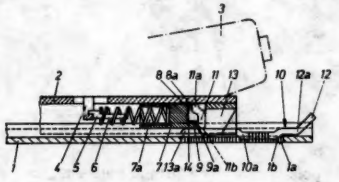


1. A trailer kingpin locking device comprising: a lock body including a hole through said body to accept a standard trailer kingpin through said hole; a sliding member slidably secured to said lock body transverse to the longitudinal axis of said hole for selectively reducing the diameter of said hole to selectively retain a standard trailer kingpin inserted in said hole, said sliding member includes a slot and is selectively engaged and retained by a locking means when in the position of selectively reducing the diameter of said hole; said locking means comprising a key type padlock having a body portion which is inserted in said slot and a shackle portion which surrounds a portion of said sliding member when said padlock is locked, said padlock located within said lock body so as to be being, fully enclosed, except for key access to said padlock when locked, said padlock selectively securing said sliding means against movement transverse to the longitudinal axis of said hole; and stop means operably secured to said lock body and engaging said slide member to prevent inadvertent removal of said sliding member from said lock body.

4,620,719
APPARATUS FOR ADJUSTING THE LONGITUDINAL POSITION OF A BINDING PART ON A SKI

Karl Stritzl, Vienna, Austria, assignor to TMC Corporation, Baar, Switzerland

Filed Feb. 24, 1984, Ser. No. 583,454
Claims priority, application Austria, Mar. 4, 1983, 774/83
Int. Cl.[4] A63C *9/18*
U.S. Cl. 280—633 **18 Claims**

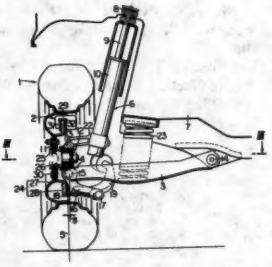


5. An apparatus for longitudinally adjusting the position of a ski-binding part on a ski, comprising a guide rail which is adapted to be secured on the ski, a guide plate which can support the ski-binding part and is movably supported on said guide rail, a locking element which can releasably lock said guide plate in various positions relative to said guide rail and which, in a side view, has an upwardly open U-shaped design which includes a web and first and second legs which project upwardly from opposite ends of said web, said web having locking teeth which can engage teeth provided on said guide rail and said locking element being supported on said guide plate for movement between a locked position and an unlocked position in which said teeth thereon are respectively engaged with and spaced from said teeth on said guide rail, manual movement of said first leg causing movement of said locking element, said second leg being biased by a piston which is movably supported on said guide plate and is in turn biased by a first end of a thrust spring which has a second end supported on said guide plate, said piston having an upper projection which projects outwardly therefrom in a direction toward said locking element and which has a first surface engaging a portion of said locking element in said locked position and also has a locking surface which engages a portion of said locking element in said unlocked position wherein said portion of said locking element moves from said first surface to said locking surface when said locking element is moved from said locked position to said unlocked position so as to releasably hold said locking element in said unlocked position.

4,620,720
STRUT TYPE SUSPENSION FOR AUTOMOBILE

Mamoru Sakata, and Masaki Minakawa, both of Tokyo, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 576,307, Feb. 2, 1984, abandoned. This application Jan. 27, 1986, Ser. No. 822,938
Claims priority, application Japan, Feb. 2, 1983, 58-15923; Feb. 2, 1983, 58-15924
Int. Cl.[4] B60G *3/02*
U.S. Cl. 280—666 **10 Claims**

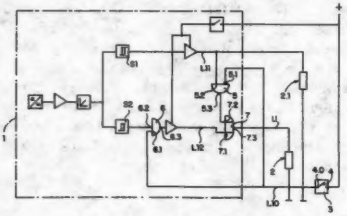


1. A strut type suspension for automobiles having a chassis, comprising a support member for rotably supporting a wheel, a lower control arm extending in the widthwise direction of the chassis and connected pivotably at its outer ends and extending substantially in a longitudinal direction of said chassis with the one end thereof pivotably connected to the chassis, and a brake unit in said wheel, said brake unit being in a central portion of said wheel with a recess opened to an inner side of said chassis, said support member having an integral member extending inwardly and downwardly of said chassis and connected with the other end of said radius rod, the outer end of said lower control arm pivoted to the support member extending into said recess so that said pivot is located close to the center line contact of said wheel with the ground.

4,620,721
AUTOMATIC PASSENGER SAFETY SYSTEM

Hansjürgen Scholz, Waldenbuch; Luigi Brambilla, Boblingen, and Walter Jahn, Ehningen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 12, 1985, Ser. No. 722,662
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1984, 3413768
Int. Cl.[4] B60R *21/32*
U.S. Cl. 280—735 **19 Claims**



1. Vehicle passenger restraint system comprising:

deceleration sensor means including means for providing a first output signal during sudden deceleration of a vehicle when said vehicle is traveling at a first threshold velocity range, and

a second output signal during sudden deceleration of a vehicle when said vehicle is traveling at a second threshold velocity range;

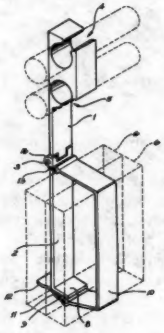
seat belt condition sensor means including means for providing a first seat belt signal indicating the seat belt is unfastened, and a second seat belt signal indicating the seat belt is fastened; and

control means for providing an air bag inflation signal to a vehicle air bag system upon receiving said first seat belt signal and said first output signal or said second seat belt signal and said second output signal.

4,620,722
SKI AND POLE HOLDER

Stephen H. Dunn, R.M.B. 85 Windsor Rd., Baulkham Hills 2153, Australia

Filed Jun. 21, 1985, Ser. No. 747,307
Claims priority, application Australia, Jun. 22, 1984, PG5632
Int. Cl.[4] A63C *11/02*
U.S. Cl. 280—814 **3 Claims**



1. A ski and pole holder comprising:

a substantially rigid elongated base member having a first substantially flat surface for supporting a pair of skis and a second substantially flat surface opposite said first substantially flat surface;

a first lug extending transversely from said first substantially flat surface adjacent one end of said base member and against which an edge of said skis may bear;

a second lug at said one end of said base member and extending transversely to said base member on both sides thereof to define a first recess in cooperation with said first lug and to define a second recess extending opposite to said first recess;

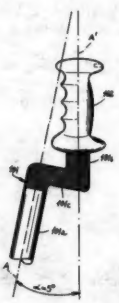
an elongated pole support member having one end hinged to a second end of said base member by means of a hinge having an axis extending transverse to the direction of elongation of said base member, said pole support member having a first substantially flat surface and a pair of resilient pole holders opposite said first substantially flat surface of said pole support member, whereby said pole support member can be pivoted to a folded position with said first substantially flat surface of said pole support member being adjacent to said second substantially flat surface of said base member; and

an elongated, substantially flat flexible strap having one end connected to said second end of said base member and an opposite end having a catch means for engaging one of said first and second recesses, said strap having a length sufficient such that said catch means can engage said second recess when said strap extends over said skis while said skis are supported by said first surface of said base member and said first lug, and such that said catch means can engage said first recess when said strap extends over said pole support member while said holder is in said folded position.

4,620,723
SKI POLE

Claude Joseph, Sallanches, France, assignor to Kerma, Sallanches, France

Continuation-in-part of Ser. No. 445,977, Dec. 1, 1982, Pat. No. 4,508,364. This application Feb. 25, 1985, Ser. No. 704,704
Claims priority, application France, Dec. 3, 1981, 81 22967
The portion of the term of this patent subsequent to Apr. 2, 2002, has been disclaimed.
Int. Cl.[4] A63C *11/22*
U.S. Cl. 280—821 **4 Claims**



1. A ski pole comprising a grip, a pole shaft, and an arm assembly mounting said grip on said pole shaft, said pole shaft having:

a straight shank, a lower end aligned with said shank, and an upper end remote from said lower end, said arm assembly having:

a rearwardly directed arm portion on said upper end of said shank and coplanar therewith, and an upper arm portion on said rearwardly directed arm portion remote from said upper end and centered on an upright axis

when said grip is in a vertical position and grasped by a skier's hand, said upper arm portion being coplanar with said rearwardly directed arm portion, a plane of said shank and said rearwardly directed arm portion intersecting a plane of said upper arm portion and said rearwardly directed arm portion and forming therebetween an acute angle, said upper arm portion and said shank forming between them another acute angle, and

said grip being mounted on said upper arm portion oriented such that, when said grip is in said vertical position, said shank, extends downwardly and forwardly of said grip at an inclination to the vertical.

4,620,724

BINDING STRIPS FOR RECTANGULAR HOLE PUNCHED PAPER

William H. Abildgaard, Redwood City, and Elmer G. Szanto, Saratoga, both of Calif., assignors to Velo-Bind, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 635,187, Jul. 27, 1984. This application Dec. 23, 1985, Ser. No. 812,621

Int. Cl.[4] B42D *1/00;* **B42B** *5/08, 5/14, 5/16*

U.S. Cl. 281—15 R **17 Claims**

1. A book comprising a plurality of sheets, each formed vicinal their spine edges with a plurality of substantially identical elongated apertures, said apertures being equally spaced apart a first distance x and being longitudinally elongated a second distance y, a pair of binding strips, a first said strip having a plurality of first studs extending therefrom, each having a longitudinal dimension z substantially less than y spaced apart from each other a distance ax where a is an integer and at least one second stud aligned with said first studs and having a longitudinal dimension substantially less than y, said second stud being spaced from one said first stud a distance substantially equal to $ax+\frac{1}{2}(y-z)$ and at least one third stud aligned with said first studs and having a longitudinal dimension substantially less than y, said third stud being spaced from one said first stud a distance substantially equal to $bx-\frac{1}{2}(y-z)$ where b is an integer which may be the same as or different from a and a second strip formed with holes spaced and dimensioned to receive said studs, said studs extending through said apertures and said holes, said second stud engaging a first short edge of one said aperture, said third said stud engaging a second short edge of another said aperture opposite said first edge, said studs being fixed to said second strip.

4,620,725

FORMS SUCH AS A NOTEBOOK AND THE LIKE

Kiyoshi Maehashi, 18-32 Jurinji-minamimachi, Nishinomiyashi, Hyogo-ken, Japan

Filed Mar. 16, 1984, Ser. No. 590,340

Claims priority, application Japan, Apr. 4, 1983, 5450016; Apr. 26, 1983, 58/63458; Apr. 26, 1983, 58/63459

Int. Cl.[4] B42D *3/02, 3/00;* **B42F** *11/04;* **H01F** *1/16*

U.S. Cl. 281—45 **3 Claims**

1. In a form set comprising

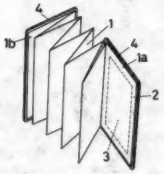
a first cover;

a second cover; and

a set of blanks connected to each other at one edge thereof and disposed between said first cover and said second cover; the improvement comprising

at least one of said covers having an entire surface thereof formed of a magnetized material with the other cover having magnetic material as a substantial part thereof so that in a closed state the two covers are magnetically attracted to each other and held in a position close to each other with said set of blanks therebetween by the magnetic attraction; and

said set of blanks connected together at one edge thereof has two external surfaces, at least one of said external surfaces has at least three margin surface areas thereof coated with or having a magnetic material so that when disposed



between the two covers the magnetic material part of said external surface will be magnetically attracted to said magnetized cover, and said magnetic attraction holds set of blanks to said cover, and so that the portion of said external surface within said margin surface areas not having any magnetic material coated thereon or therein enables said magnetized cover to magnetically attract the other cover through said non-magnetic material portion of said external surface.

4,620,726

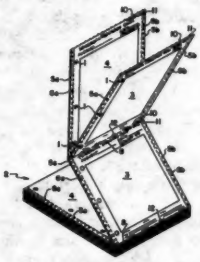
COMPUTER-ASSISTED LABORATORY NOTEBOOK KIT

Grace M. Donnelly, Hasbrouck Heights, N.J., assignor to General Foods Corporation, White Plains, N.Y.

Filed Dec. 9, 1985, Ser. No. 806,891

Int. Cl.[4] B41L *1/20, 3/10;* **B65B** *53/00*

U.S. Cl. 282—1 R **6 Claims**



1. A computer-assisted laboratory notebook kit comprised of a shrink wrapped packet of papers for insertion into a binder to form a permanent laboratory notebook said packet including:

(a) a separate title page sheet and at least one separate table of content sheets, said title page sheet being preprinted with a character designation which will distinguish said title page from other comparable title pages, said table of content sheets being designed to permit manual entry of information and said title page sheets and table of content sheets containing aligned punched-out holes for accepting binding posts or rings;

(b) a fan-folded, continuous strip of rectangular, two-ply sets of paper sheets for feed to a computer printer, wherein information printed on the top ply is simultaneously recorded on the face of the bottom ply, and wherein the sheets are distinguished by perforated tear lines perpendicular to the edges of the strip, said tear lines providing for separation of the continuous strips into separate sets of

paper sheets, said strips containing left and right edge perforated tear strips with each of said tear strips containing a linear array of apertures designed to permit engagement with sprocket wheels of edge feed computer printers, each sheet being preprinted with the character designation present on the title page and a sequential sheet number, said sheet numbers begining with numeral one, and wherein both plys of each set of paper sheets possess identical sheet numbers and further each sheet containing punched-out holes aligned with the holes present in the title page; and

(c) a shrink wrap of clear plastic film surrounding said packet of papers.

4,620,727

CREDIT CARD

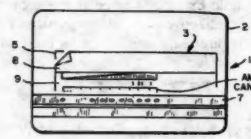
Hermann Stockburger, Kirnachweg 7, D-7742 St. Georgen, and Hans-Georg Winderlich, Niedere Strasse 36, D-7730 VS-Villingen, both of Fed. Rep. of Germany

Continuation of Ser. No. 479,067, Mar. 16, 1983, abandoned. This application May 28, 1985, Ser. No. 738,493

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1981, 3129364

Int. Cl.[4] B42D *15/00*; G06K *5/00*

U.S. Cl. 283—82 **11 Claims**



1. A credit card with authenticity information and with information representing an authorized amount, the credit card being formed by a card body and a detachable element connectable thereto, wherein said element is made of a paper strip or foil applied to the card body so as to be detachable therefrom without the card body being damaged so as not to be reusable and wherein a storage medium and clock track is provided on said carb body, and the element comprises a cancellation track and randomly distributed particles which react to electrical or magnetic measurement for providing authenticity information.

6. A credit card comprising a card body and an element which is detachably connectable to said card body and replaceable by a replacement element, said element and/or replacement element comprising data indicating an extent of authorization and a structure which can be sensed for providing identification information and said card body comprising a clock track and a storage medium for storing authenticity information corresponding to at least parts of said identification information, said authenticity information being stored so that it is replaceable by new authenticity information.

4,620,728

FLOWLINE SWIVEL WITH REMOVABLE PRODUCT SEAL SURFACES

James R. Barth, and Thomas G. A. Choate, both of Houston, Tex., assignors to Exxon Production Research Company, Houston, Tex.

Continuation of Ser. No. 783,051, Sep. 30, 1985, abandoned, which is a continuation of Ser. No. 565,315, Dec. 27, 1983, abandoned. This application Mar. 5, 1986, Ser. No. 838,391

Int. Cl.[4] F16L *27/08*

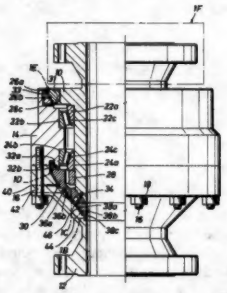
U.S. Cl. 285—14 **44 Claims**

1. A flowline swivel for use in a waterbody comprising:

a body flange having an upper end, a lower end, a longitudinal axis from said upper end to said lower end, a fluid passageway having said longitudinal axis at its center and passing from the upper end to the lower end, having a removable surface adjacent said upper end and adapted to receive at least one lower environmental seal near said upper end and means to accept at least one product seal near said passageway, and means to removably attach said body flange to a swivel body,

a generally cylindrical swivel body having a longitudinal axis generally colinear with the axis of said body flange, having an upper end and a lower end and an inner surface, said upper end adapted to accept at least one upper environment seal, a portion of said lower end adapted to accept at least one middle environmental seal and another portion of said lower end adapted to removably attach said swivel body to said body flange, said inner surface adapted to accept outer races of a bearng assembly,

a generally cylindrical swivel shaft rotatable with respect to said body flange and said swivel body and having an upper end and a lower end and a longitudinal axis substantially colinear with the axes of the body flange and swivel body, a fluid passageway passing from said upper end to said lower end and having the longitudinal axis of the



swivel shaft substantially at its center, means located near its upper end adapted to accept said at least one upper environmental seal, an outer surface adapted to accept inner races of a bearing assembly, and means near said swivel shaft lower end to accept a removable inner sealing surface, and

a removable inner sealing surface removably attached to the swivel shaft and having an inside surface and an outside surface, the outside surface adapted to lie generally flush against said body flange but adapted to accept said at least one product seal and said at least one lower environmental seal, the inside surface adapted to accept said at least one middle environmental seal and engage said rotatable shaft, whereby said at least one product seal is capable of maintaining liquid in said passageway, said at least one lower environmental seal is capable of maintaining liquid from said waterbody out of said passageway and said at least one upper environmental seal and said at least one middle environmental seal are capable of maintaining liquid out of the said bearing assembly.

4,620,729

ROUND PIPE STARTER FITTING

Melvin E. Kauffman, Lathrop, Calif., assignor to Tru-Fit Mfg., Inc., Lathrop, Calif.

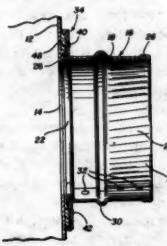
Filed Mar. 28, 1985, Ser. No. 717,969

Int. Cl.[4] F16L *41/00*

U.S. Cl. 285—158 **4 Claims**

1. A connecting fitting for joining a lateral tubular member to a main tubular member, said connecting fitting including a tubular sheet material body having first and second ends, said first end including means for connection with one end of said lateral member, said second end defining a peripherally extending and outwardly opening groove, a substantially annular

sheet material collar assembly including an inner periphery tightly seated in said groove, the side of said collar assembly remote from said first end including a flat annular resilient gasket secured thereto having an adhesive outer surface for adhesive securement, only, to an outer surface of a wall portion of said main tubular member extending about an opening



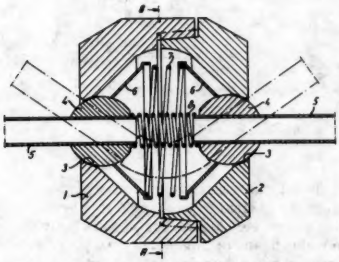
formed in said main tubular member, said annular collar assembly including a pair of substantially semi-annular sheet material sections of slightly greater than 180° in angular extent with the arc ends thereof overlapped and joined together by a stamp lock securing means said groove being of a width equal to twice the thickness of said sheet material sections.

4,620,730

COUPLING DEVICE FOR PIPELINES

Uffe M. Larsen, Soborg Hovedgade 74, 2860 Soborg, Denmark

Filed Mar. 15, 1985, Ser. No. 712,034
Claims priority, application Denmark, Aug. 20, 1984, 3982/84
Int. Cl.⁴ F16L *27/04*
U.S. Cl. 285—166 **5 Claims**



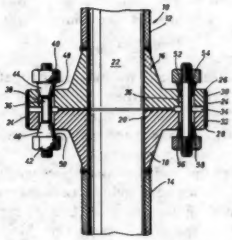
1. A coupling device for pipelines, such as off-shore oil or gas lines, comprising a casing having at least one opening for introducing the end of a pipe section, said opening being surrounded towards the interior of the casing by a frusto-conical wall surface diverging towards the interior of the casing, a substantially spherical member adapted for rigid connection with said end of the pipe section positioned in said casing to engage said frusto-conical wall surface; a pressure member having an end engaging said spherical member and facing towards said frusto-conical wall surface and biasing said spherical member into firm engagement with said frusto-conical wall surface while allowing said spherical member to turn relative to said frusto-conical wall surface thus permitting a variation of the angular orientation of said pipe section relative to said casing; said pressure member and means for biasing said pressure members toward and against said spherical members being of frusto-conical shape and arranged coaxially with said frusto-conical wall surface, the end of said pressure member which engages said spherical member being the smallest diameter thereof; the casing comprising two interconnected parts having substantially aligned openings each being surrounded by coaxial frusto-conical wall surfaces diverging towards each other, spherical members arranged in each end of said casing and adapted for rigid connection with each of said pipe sections, and a said pressure member associated with both of said spherical members to cause said spherical members to engage their respective frusto-conical wall surfaces; said spherical members and said frusto-conical wall surfaces being proportioned to allow an angular turning of each of said pipe section through at least 35° in any direction relative to the common axis of the frusto-conical wall surfaces independently of the other pipe section.

4,620,731

APPARATUS FOR SEALING PIPE FLANGES

Bendel S. Rushing, 9426 Bankside, Houston, Tex. 77031

Filed Aug. 1, 1985, Ser. No. 761,461
Int. Cl.⁴ F16L *23/00*
U.S. Cl. 285—363 **1 Claim**



1. An apparatus for sealing a pair of circular coacting pipe flanges which are normally secured together by a plurality of bolts and nuts extending through bolt holes in the flanges comprising,

sealing means connected to and extending around the outer periphery of both of said flanges for sealing the outer periphery of said flanges,

a bolt having threaded portions at each end and an unthreaded portion between the threaded portions, and having a coacting first and second nuts connected to the threaded portions, and extending through each of the bolt holes,

a first sealing ferrule positioned about each bolt between the first nut and the bolt hole and engaging the unthreaded portion of the bolt for sealing,

a second sealing ferrule positioned about each bolt between the second nut and the bolt hole for engaging the unthreaded portion of the bolt for sealing,

said ferrules including a conical exterior surface tapering inwardly and extending into the hole for preventing the escape of fluids through the bolt holes,

each first nut and first ferrule including coacting tapered surfaces for pressing the first ferrules into a sealing relationship with the first nut, bolt and adjacent flange,

each second nut and second ferrule incuding coacting tapered surfaces for pressing the second ferrules into a sealing relationship with the second nut, bolt and adjacent flange,

the coacting tapered surfaces between the first ferrules and the first nuts and the coacting tapered surfaces between the second ferrules and the second nuts taper outwardly from the bolts toward the flanges.

4,620,732

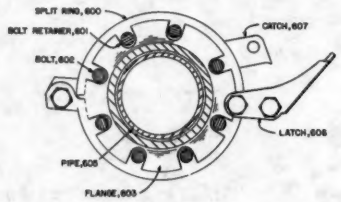
BOLT FRAME CONSTRUCTION

Daniel Q. Marshall, Cincinnati, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 14, 1985, Ser. No. 798,042

Int. Cl.[4] F16L *23/00*

U.S. Cl. 285—368 **4 Claims**



1. An apparatus for coupling the ends of two sections of pipe together said apparatus comprising:

first and second mating flanges, each on the ends of one of the sections of pipe and each having a plurality of spaced radial notches around its perimeter; the notches on said first mating flange being aligned with the notches on the second mating flange;

a means for sealing said first and second mating flanges when they are pressed together, said sealing means being compressed between said first and second mating flanges to prevent leakage when the sections of pipes are connected by the coupling apparatus;

a plurality of nut and bolt assemblies; and

a split positioning ring which is fitted over the first and second mating flanges with the sealing means therebetween, said split positioning ring having two rows of spaced, inwardly protruding tabs which form pairs of tabs which are aligned with and encompass the plurality of spaced radial notches around the perimeter of the first and second mating flanges, each of the tabs having an orifice which holds one of the nut and bolt assemblies in place in the spaced radial notches.

4,620,733

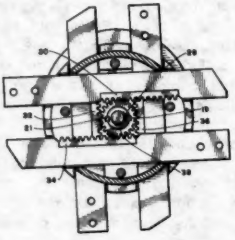
SHIPBOARD INTERNAL LOCKING SYSTEM

Joseph J. Gaunt, and Bobby J. Leek, both of Oxnard, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 2, 1985, Ser. No. 751,157

Int. Cl.[4] E05C *9/12*

U.S. Cl. 292—39 **6 Claims**



1. A locking bolt system comprising:

a. a plurality of bolts having racks mounted thereon and being driven by pinions rotated by a drive shaft;

b. rotation of said drive shaft being associated with a rotatable contoured locking disk positionable for controlling the rotation thereof;

c. said disk being locked and unlocked by two lugs, each of said lugs being operated by an independent lock cylinder and both of said two lugs required to be in the unlocked position before said disk is free to allow rotation of said drive shaft;

d. said disk having two cavities into which said two lugs are positioned for preventing rotation of said disk and said drive shaft; and when each of said lugs is rotated away from said cavities permitting rotation of said disk and said drive shaft when each of said lugs is in the unlocked position;

e. said locking bolt system being positioned on the interior of a water tight door and access to said lock cylinders being through an opening covered by a removable screw cap;

f. alarm switch means for monitoring operation and tampering of said locking system;

g. said alarm switch means including switch actuating means extending through said door and being actuated when said screw cap is removed.

4,620,734

DOOR LOCKING MECHANISM

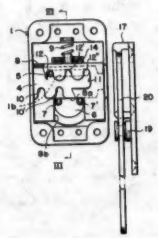
Toshiharu Narazaki, Fuchu, Japan, assignor to Ryobi Limited, Hiroshima, Japan

Filed Apr. 15, 1985, Ser. No. 723,051

Claims priority, application Japan, Apr. 19, 1984, 59-58153[U]

Int. Cl.[4] E05C *1/06*

U.S. Cl. 292—142 **5 Claims**



1. A door locking mechanism comprising:

a key body adapted to be secured to a hem of a door;

a slide key slidably mounted in said key body and selectively movable to any one of an unlocked position, a half-locked position, and a complete-locked position, and including a pair of inlets and first locating means to retain said slide key in any one of said positions;

a keeper secured to the door frame and having a recess in cooperating alignment along a given line with said slide key to receive therein a head of the slide key;

a half-locking arm rotatably and slidably secured to said keeper between said key body and said keeper and having an opening alignable between said slide key and said recess of the keeper and sized to accomodate the slide key head therein, the head of said slide key being substantially fully retracted into said key body in the unlocked position of said slide key, received only in said half-locking arm opening in the half-locked position, and received in said keeper recess in the complete-locked position, said half-locking arm being rotatable and slidable in a plane substantially perpendicular to the door in its closed position;

rotary means rotatably secured to said key body and including at least one pin thereon for selectively engaging said at least one pin into one of said pair of inlets and, when rotated, moving said slide key along said line;

a slide plate slidably mounted in said key body to move in a direction substantially perpendicular to said given line,

and including second locating means cooperating with said first locating means for positioning said slide key in its unlocked, half-locked and complete-locked positions, said slide plate having an inverted-U shaped cross section and straddling said slide key with a portion thereof being engageable with said at least one pin; and

biasing means between said key body and said slide plate for urging said slide plate to engage said at least one pin to thereby disengage said pin from said inlets.

4,620,735

DOOR-BOLTING DEVICE FOR ELECTRICAL APPLIANCES

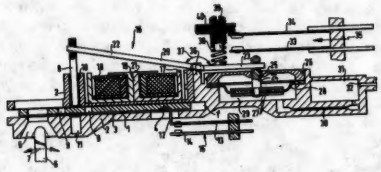
Konrad Heydner, Altdorf, Fed. Rep. of Germany, assignor to Ellenberger & Poensgen GmbH, Altdorf, Fed. Rep. of Germany

Filed Jun. 11, 1985, Ser. No. 743,704

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1984, 3430414

Int. Cl.⁴ E05B *47/00*

U.S. Cl. 292—144 **12 Claims**



1. A door-bolting device for electrical apparatus, in particular for the bolting of the door of a washing machine, comprising

(a) a housing,

(b) a slide bolt having several passage openings and being longitudinally displaceable in a guiding groove in the said housing;

one of said passage openings being a locking opening associated with, and adapted for being entered by, a door-locking hook being connected with the door to be bolted,

at least one of the other passage openings being a bolting opening adapted for being penetrated by a bolting rod so as to obstruct the movement of said slide bolt when said door-bolting device is in bolting position;

said slide bolt comprising a lock-down recess being in parallel and staggered relationship with said passage openings of said slide bolt;

(c) a signal contact unit comprising a fixed signal contactor member and a signal contactor spring located opposite said member,

said signal contactor spring being adapted for engaging said lock-down recess when said door-bolting device is in open position, and for disengaging said lock-down recess by the bolting movement of said slide bolt, whereby, in the bolting position, said signal contactor unit is adapted to make contact by a spatial displacement of said signal contactor spring;

(d) a bolt-actuating relay comprising a magnet having a pole face and comprising a magnet yoke, an electromagnetic coil, a core and a magnet armature lever being disposed laterally besides said pole face of said magnet and having a bolting arm and a main contact arm,

said bolting arm having a free end constituting a bearing for said bolting rod, said rod being displaceably guided in a transverse groove in said housing;

(e) a pressure chamber;

(f) a diaphragm dividing the interior of said chamber;

(g) a pressure chamber lid having a lid opening;

(h) a connecting shaft being axially displaceably guided in, and snugly filling the interior of, said lid opening,

said connecting shaft being fastened to said diaphragm, and said main contact arm having a free end constituting a bearing for said connecting shaft;

(i) a pressure-equalizing chamber;

(j) a fluid-conducting channel connecting said pressure-equalizing chamber with said pressure chamber, and

a supply duct adapted for feeding a fluid medium from the outside into said pressure-equalizing chamber; and

(k) an adjusting contactor unit comprising a fixed adjusting contactor member and an adjusting contactor spring adapted for making electrical contact with said adjusting contactor member at a main contact point therebetween,

said connecting shaft having an end facing away from said diaphragm and increasingly urging said adjusting contactor spring against the bias thereof, into contact at said main contact point.

4,620,736

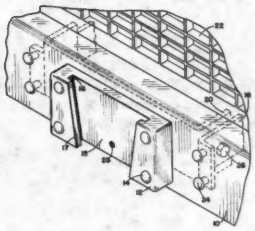
ADAPTOR PLATE FOR VEHICLE BUMPER

Teddy L. Shanks, Collinsville, Okla., assignor to Franklin L. Best and Betty L. Best, both of Bartlesville, Okla.

Continuation of Ser. No. 642,355, Aug. 20, 1984, abandoned. This application Jan. 15, 1986, Ser. No. 819,463

Int. Cl.⁴ B60R *19/48*

U.S. Cl. 293—116 **4 Claims**



3. A mechanism for easy attachment and removal of an accessory to the bumper of a motor vehicle which comprises:

a wedge shaped plate;

a substantially flat plate-like bracket having a front surface and a back and a top and a bottom for holding said plate and mountable in a substantially vertical position on the face of said bumper, said bracket front surface having a wedged shaped niche having two sloping sides, said niche is wider at the top than at the bottom and incorporating a groove along the sides of said niche;

a tongue being an integral part of said plate and of a size to fit into said groove in said niche;

means for mounting an accessory upon said plate.

4,620,737

MANUALLY OPERABLE PERSONAL CONVENIENCE IMPLEMENT

Sampson D. Sanger, Liberty, N.Y., assignor to Sanger-Nelken Enterprises, Clifton, N.J.

Filed Jan. 7, 1985, Ser. No. 689,447

Int. Cl.⁴ A47J *51/06*

U.S. Cl. 294—19.1 **25 Claims**

1. A manually operable, multifunctional personal convenience implement comprising:

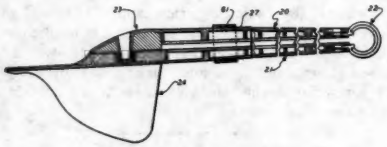
a. an upper arm having a longitudinal axis, a secured end, and a free end;

b. a lower arm having a longitudinal axis, a secured end, and a free end;

c. pivot means for pivotally securing the upper arm to the lower arm, allowing the upper and lower arms to be pivotally movable with respect to each other in a plane,

the pivot means being connected to the secured end of the upper arm and the secured end of the lower arm;

d. first engagement means on the free end of the upper arm and second engagement means on the free end of the lower arm, the first and second engagement means being cooperatively engageable and disengageable with each other upon pivotal movement of the arms in said plane; and



e. wedge means at the free end of the lower arm, having an upper surface extending generally arcuately outwardly and downwardly with respect to the plane of pivotal movement of the arms said surface tapering inwardly toward the free end of said arm in a first plane generally perpendicular to the plane of pivotal movement of the arms and tapering upwardly toward the free end of said arm in a second plane generally perpendicular to both the plane of pivotal movement of the arms and the first said plane.

4,620,738

VACUUM PICK FOR SEMICONDUCTOR WAFERS

Vladimir Schwartz, Lexington, and Avrum Freytsis, Swampscott, both of Mass., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Aug. 19, 1985, Ser. No. 766,458
Int. Cl.[4] B66C *1/02*
U.S. Cl. 294—64.1 **10 Claims**

1. A vacuum pick comprising:

a housing having a workpiece support surface with a cavity therein;

a resilient flexible member covering at least a portion of the cavity to form an enclosure;

a rigid chuck mounted on the flexible member to permit movement of the chuck relative to the housing, the chuck having a substantially flat surface portion for receiving a workpiece;

vacuum source means connected to the enclosure, the chuck and the flexible member having a passage therethrough providing a fluid connection between the surface portion of the chuck and the enclosure, the chuck having an extended position when vacuum is not applied to the enclosure and a retracted position when vacuum is applied to the enclosure, the workpiece being drawn against the support surface of the housing when the chuck is in the retracted position.

4,620,739

BINGO CHIP BELL

William Coralline, 5235 W. Wabash Ave., Brown Deer, Wis. 53223

Filed Dec. 17, 1984, Ser. No. 682,692
Int. Cl.[4] A63F *9/00*; B66C *1/04*
U.S. Cl. 294—65.5 **7 Claims**

4. A magnetic pickup device for removing magnetically attracted chips from a game board, said device comprising

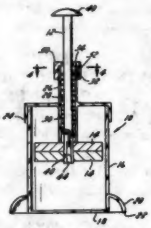
a casing having a flat bottom wall,

a cover on said casing,

a plunger supported for reciprocal movement in said cover,

a magnet mounted on the plunger for movement toward and away from said bottom wall,

spring means for biasing the plunger away from the bottom wall, and



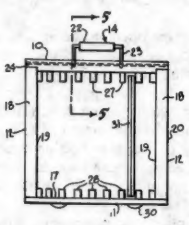
means on the outer perimeter of said casing for stabilizing the device on a flat surface whereby on movement of the magnet into close proximity to the wall, the magnetic force of the magnet will attract magnetically attractable chips into engagement with the bottom wall and on movement of the magnet away from the bottom wall, the chips will be released from the bottom wall.

4,620,740

CABINET FOR THE STORAGE AND CARRYING OF RECORD ALBUMS

Michael Kinzig, 2260 Cahuenga Blvd., Los Angeles, Calif. 90068

Filed Jan. 31, 1986, Ser. No. 824,455
Int. Cl.[4] A47B *81/06*; B65D *71/00*
U.S. Cl. 294—159 **6 Claims**



1. A cabinet for the storage and carrying of a plurality of phonograph record albums in closely packed non-warping disposition while permitting easy location, removal and reentry of said albums, said cabinet comprising:

(a) top and bottom panels, opposed side panels, and a rear panel, said panels being rigid and rectangular and interconnected to form a box-like enclosure having an open front extremity defined by the forward edges of said top, bottom and side panels, said panels being further characterized in having substantially flat interior and exterior faces,

(b) U-shaped handle means associated with the exterior face of said top panel and pivotably attached thereto at two sites centered upon a line that perpendicularly intersects said side panels at sites located closer to said open front extremity than said rear panel, said handle means being adapted to swing in a vertical path between a carrying mode upright from said top panel and a storage mode wherein said handle means is below the exterior face of said top panel,

(c) an upper series of straight parallel uniformly spaced

retaining shoulders disposed upon the interior face of said top panel, elongated between said rear panel and open front extremity, and extending downwardly within said enclosure,

(d) a lower series of straight parallel uniformly spaced retaining shoulders disposed upon the interior face of said bottom panel and extending upwardly within said enclosure in vertical alignment with the shoulders of said upper series, and

(e) interengaging means associated with the exterior faces of said top and bottom panels in a manner permitting one cabinet to be stacked upon another in a condition resistant to sliding movement, whereby

(f) phonograph record albums of equal size can be slidably inserted through said open front extremity into abutting engagement with the interior face of said rear panel and held in substantially vertical disposition by matching upper and lower shoulders, and

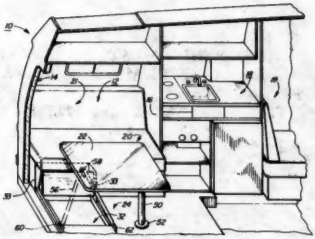
(g) when carried by said handle means, said open front extremity is automatically tilted upwardly, thereby preventing discharge of the albums from the cabinet.

4,620,741

COMBINATION TABLE SUPPORT AND TRUNK ACCESS SYSTEM FOR A RECREATIONAL VEHICLE

Jacobus N. Hanemaayer, Kitchener, Canada, assignor to Hanmar Home Equipment Limited, Kitchener, Canada

Filed Oct. 18, 1985, Ser. No. 789,031
Claims priority, application Canada, Sep. 6, 1985, 490179
Int. Cl.[4] B60R 7/04
U.S. Cl. 296—37.14 **7 Claims**



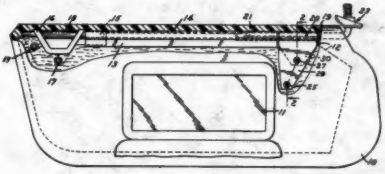
1. A recreational vehicle including a floor, a dining area including a table having a top mounted above the floor, a storage compartment in or below said floor, at least a substantial part of which compartment is located directly below said table top, an access cover for the storage compartment movably disposed over the entrance to the storage compartment and positioned below the table top to allow access to the storage compartment from either the front or the rear relative to the vehicle, said table including a first upright leg mounted to said floor and supporting the table top at a point adjacent one end of the latter, and a second leg detachably secured at its upper end to another point on the table top and at its lower end to either one of a spaced pair of points on said floor adjacent opposing margins of the entrance to said storage compartment, said second leg being inclined either forwardly or rearwardly depending on at which of said spaced points said lower end of said second leg is secured so as to facilitate access to the storage compartment from either the front or the rear thereof, respectively.

4,620,742

VISOR DETENT

James A. Gavagan, Centerline, Mich., assignor to Irvin Industries Inc., Rochester Hills, Mich.

Filed Nov. 21, 1984, Ser. No. 673,787
Int. Cl.[4] B60J 3/02
U.S. Cl. 296—97 K **7 Claims**



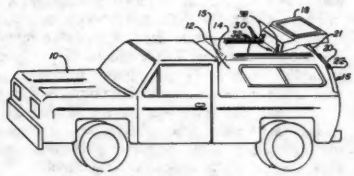
1. Automotive vehicle sun visor comprising sun screening visor body with internal flat reinforcement core means, cylindrical mounting rod arm means, pivotal visor edge, mounting rod connecting means for accommodating raised storage and lowered adjustable angle use positions, said connecting means including resilient detent means for retaining said stored position with predetermined torque resistance against displacement and friction means of relatively lower torque resistance for retaining said visor in any lowered adjusted angle use position, said connecting means beinfg characterized by wrap around sheet metal spring means formed to extend around said cylindrical rod arm means with ends secured to both sides of said visor body reinforcement core means, and inter-engaging flat means in both said spring and rod means providing said detent means.

4,620,743

SLIDE MOUNTED DOOR HINGE ASSEMBLY

Alan B. Eke, Fairmont, Minn., assignor to Glasstite, Inc., Dunnell, Minn.

Filed Feb. 27, 1985, Ser. No. 705,327
Int. Cl.[4] B60J 5/12
U.S. Cl. 296—146 **12 Claims**



1. A slide mounted door hinge asesmbly for a vehicle body having a roof, depending sidewalls, an opening for access into the vehicle body and a pivotally mounted door at the opening for closing the opening, comprising

(a) an elongated guide track affixed to the outside of the vehicle body extending substantially perpendicular from the opening; and

(b) a hinge slideably connected to the guide track and affixed to the edge portion of the door adjacent the track with the opposing edge portion of door being adapted to be swingable away from the vehicle body for pivotally and slidably mounting the door to the vehicle body thereby permitting pivotal movmement of the closed door to an open position and further permitting sliding movement of the opened door along the track to a retracted position away from the opening.

4,620,744

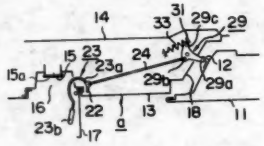
SLIDE DOOR LOCKING DEVICE FOR VEHICLES DURING FEEDING OF FUEL TO A FUEL TANK POSITIONED NEAR A SLIDE DOOR

Yasuo Yui, Isehara, and Kazunori Kawamo, Atsugi, both of Japan, assignors to Nissan Shatai Co. Ltd., Hiratsuka, Japan

Division of Ser. No. 410,892, Aug. 24, 1982, abandoned. This application Dec. 3, 1984, Ser. No. 677,384

Int. Cl.[4] B60J *5/06;* **B60K** *28/16*

U.S. Cl. 296—155 **5 Claims**



1. In a vehicle having a body with a door opening, a slide door for sliding from a first to a second position to cover and expose respectively said door opening, and a fuel tank with a fuel inlet and fuel cap, said door when in said open position obstructing access to said fuel inlet and fuel cap, the improvement comprising a locking device for the slide door, said locking device being made operative during feeding of fuel to said tank and including:

(a) a stop member attached to the rear end of said slide door;

(b) a stopper lever mounted pivotally inside a body panel of said vehicle, the panel defining the rear end of said door opening, an end of the stopper lever being subject to projecting into the door opening beyond the front end of the panel and when said door is in said first position engaging with the stop member to obstruct opening of said slide door;

(c) actuating lever means disposed in front of said fuel inlet cap and in one position covering said fuel supply inlet and cap within the panel;

(d) a link member coupling the rear end of the stopper lever and the base part of the actuating lever means; and

(e) a spring for biasing the stopper lever to a stop position where the stopper lever engages with the stop member to lock said door in said first position to said panel when the actuating lever means is operated to expose said fuel inlet and cap during feeding of fuel to a fuel tank, said engagement preventing the slide door from opening, said engagement of the stopper lever with the stop member being subject to release by further pivoting the stopper lever from the stop position by applying force of predetermined magnitude to the slide door, said door stop member acting on said stopper lever against the biasing force of the spring, said applied force moving said stopper lever permitting opening of the slide door after said actuating lever means is pivoted to expose said fuel inlet.

4,620,745

VEHICLE BODY WHEEL OPENING STRUCTURE

William G. Jacobs, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 23, 1985, Ser. No. 779,109

Int. Cl.[4] B62D *25/16;* **B60R** *13/02*

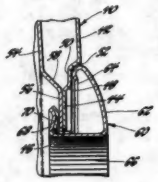
U.S. Cl. 296—198 **1 Claim**

1. A vehicle body wheel opening structure comprising: a vehicle body outer panel member having a generally vertically extending terminal flange, the edge portion of which defines a generally U-shaped wheel outer opening, the terminal flange being offset inwardly of the outer body panel by at least one intermediate juncture flange extending angularly therebetween,

a vehicle body wheelhouse member having a generally vertically extending terminal flange, the edge portion of which defines a wheel inner opening complementary in shape to that defined by the terminal flange of the outer panel, the terminal flange of the wheelhouse member being offset outwardly thereof by at least one intermediate juncture flange extending angularly therebetween,

the terminal flanges of the body panel member and the wheelhouse member having their respective inner and outer sides abutting and joined to each other to provide a body pinchweld structure extending generally within a plane of the wheel opening defined by said edge portions,

a wheel opening molding of U-shape having open ends, said molding including an outer leg overlying the outer side of



the terminal flange of the outer body panel member, the outer leg including a return bent flange engaging a juncture flange of the outer body panel member, the molding further including a bight portion opposite said edge portions of said body panel member and said wheelhouse member, and an inner leg resiliently engaging the inner side of the wheelhouse member terminal flange, the inner and outer legs of the wheel opening molding clamping the molding to the body wheel opening structure, closure means closing said open ends of said molding and means securing said closure means to said body wheel opening structure.

4,620,746

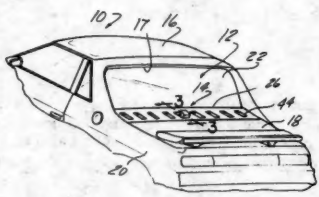
FOLD DOWN WINDOW LATCH APPARATUS

Michael P. Alexander, Grosse Ile, Mich., assignor to ASC Incorporated, Southgate, Mich.

Filed Feb. 8, 1985, Ser. No. 699,785

Int. Cl.[4] B60J *1/18*

U.S. Cl. 296—201 **7 Claims**



1. A latch apparatus for a vehicle having a rear window pivotally mounted at a bottom edge to the vehicle and movable between a raised position and a folded down position overlying the rear deck lid of the vehicle comprising:

a channel member mounted on the vehicle rearward of the rear window of the vehicle longitudinally with respect to the vehicle;

latch means, slidably mounted on the channel member for releasably engaging one edge of the rear window when the window is in the folded down position; and

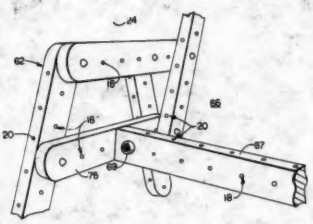
means, mounted within the channel member for biasing the latch means toward the front of the vehicle.

4,620,747

CUSTOM CONSTRUCTION SYSTEM

Patrick Lemmon, 1323 Delta Ave., Cincinnati, Ohio 45208

Filed Sep. 23, 1983, Ser. No. 535,279
Int. Cl.[4] A47B 3/00
U.S. Cl. 297—440 4 Claims



1. A custom construction system adapted to eliminate sharp or jagged edges, compromising:

a first straight structural member having spaced-apart first and second ends;

a second straight structural member having spaced-apart third and fourth ends;

each said structural member having a pair of opposed flat sides each of width x and a pair of opposed edges therebetween, said sides and said edges of each said structural member extending between said ends thereof to define a generally rectangular cross-section between said ends;

said first structural member further including a first bore means in said first end for receiving a securement device therethrough, said first bore means extending between said sides and spaced a distance approximately x/2 from each said edge of said first structural member;

said second structural member further including second bore means in said third end for receiving a securement device therethrough, said second bore means extending between said sides and spaced a distance approximately x/2 from each said edge of said second structural member;

said first end and said third end each being adapted to define a semicircular arc having a radius approximately x/2 centered about said first bore means and said second bore means, respectively, when said structural member is viewed from a said side thereof;

said first end adapted to be joined to said third end such that a portion of one said side of said first structural member overlaps a portion of one said side of said second structural member and such that said first bore means is coaxially aligned with second bore means whereby there will be substantially no portion of said first end projecting beyond said third end when viewed from a non-overlapping said side of one of said structural members thereby to eliminate sharp or jagged edges.

4,620,748

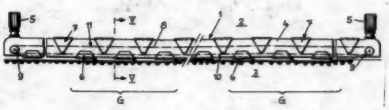
METHOD OF AND ARRANGEMENT FOR LOOSENING, LOADING AND TRANSPORTING OF STRATIFIED MINERALS IN UNDERGROUND ELONGATED FRONT LONGWALLS

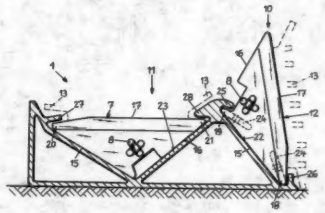
Peter Heintzmann, Bochum; Manfred Koppers, Duisburg; Karlheinz Bohnes, Bochum, and Heinz Kunzer, Herne, all of Fed. Rep. of Germany, assignors to Bochumer Eisenhütte Heintzmann GmbH & Co. KG, Bochum, Fed. Rep. of Germany

Filed Apr. 6, 1984, Ser. No. 597,525
Claims priority, application Fed. Rep. of Germany, May 20, 1983, 3318360
Int. Cl.[4] E21C 9/10
U.S. Cl. 299—18 17 Claims

1. A method of loosening, loading and transporting stratified minerals, especially coal in underground longwalls, comprising the steps of providing single endless rotatable and positively guided pulling means with integrated loosening elements and transporting elements and having a working run and a transporting run; loosening and loading minerals by the loosening elements of the single pulling means so that the minerals are only loosened and loaded in the working run of the single pulling means; and transporting the minerals by the transporting elements of the single pulling means so that the minerals are transported by the transporting run moving in an opposite direction relative to the working run.

4. An arrangement for loosening, loading and transporting





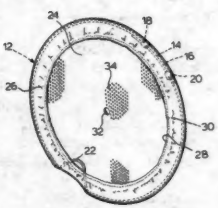
stratified minerals, especially coal in underground longwalls, comprising endless rotary pulling means rotating in a longitudinal direction of a longwall and having a working run extending in the longitudinal direction of the longwall and a transporting run located behind the working run at a back filling side; loosening elements integrated in said pulling means on said working run to loosen as well as to load the minerals; and transporting elements integrated in said pulling means and arranged on said transporting run for transporting the minerals in the opposite longitudinal direction of the longwall.

4,620,749

DECORATIVE ATTACHMENTS FOR WHEELS

Robert L. McEachern, Vancouver, Canada, assignor to The Original Round Effects Company Limited, Vancouver, Canada

Filed Nov. 19, 1985, Ser. No. 799,706
Int. Cl.[4] B60B 7/00; B60R 13/00
U.S. Cl. 301—37 SA 13 Claims



1. A decorative attachment for a wheel having spokes extending radially from a central hub to a tire-carrying rim, said attachment comprising a circular rod-like frame having a diameter slightly less than the diameter of the wheel rim, and a decorated flexible material extending across and secured to the frame, said material having a central aperture to receive the hub and a multitude of small appertures throughout the mate-

rial providing a porosity of from about 30% to about 80% to enable transversely moving air to pass therethrough.

4,620,750

MAIN BRAKE CYLINDER

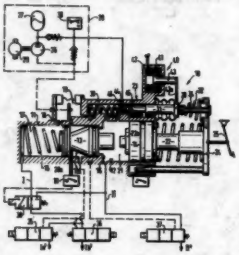
Heinz Leiber, Oberriexingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 2, 1983, Ser. No. 548,044

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1982, 3240680

Int. Cl.⁴ B60T *8/44*; F15B *7/00*

U.S. Cl. 303—114 **12 Claims**



1. Main brake cylinder for a vehicle brake system which comprises a hydraulic control valve (23) including at least one control valve element (31) actuated by a brake pedal (25), a pedal push rod (22) protruding into the main brake cylinder beside said control valve (23), which functions as a hydraulic sensing piston and is displaceable by said brake pedal simultaneously with displacement of said control valve element (31), said hydraulic sensing piston acts counter to said brake pedal and in the event of emergency braking acts upon said main brake cylinder upon actuating the brake pedal so as to generate pressure in at least one brake circuit, said brake circuit contains a plurality of electromagnetic control valves for prevention of wheel locking (ABS), said system also includes an electromagnetic control element (40) associated with said control valve (23), said electromagnetic control element adapted to directly actuate said control valve (23) independently of the brake pedal (25) for generating pressure in at least one brake circuit, said electromagnetic control element being disposed relative to said pedal push rod, means for directly coupling said electromagnetic control element to said control valve element (31) of the control valve (23), and means (24, 34) disposed between the brake pedal and the control valve element embodied such that said means transmits only pressure forces onto the control valve element, so that upon an activation of the electromagnetic control element, said brake pedal and said sensing piston remain in their positions of rest.

4,620,751

ROLLER BEARING FOR LINEAR MOTION

Hiroshi Teramachi, 3-4-6, Kamiosaki, Shinagawa-ku, Tokyo, Japan

Filed Apr. 26, 1985, Ser. No. 727,792

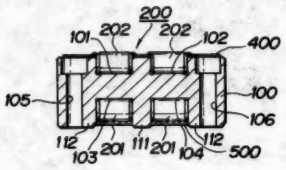
Claims priority, application Japan, Sep. 28, 1984, 59-145655[U]; Sep. 28, 1984, 59-145656[U]; Sep. 28, 1984, 59-145657[U]

Int. Cl.⁴ F16C *29/06*

U.S. Cl. 384—44 **5 Claims**

1. A linear roller bearing comprising:

a bearing body provided with a first surface and a second surface disposed in parallel relation with each other, said first surface being formed with a plurality of loaded roller grooves for receiving rollers each having a depth less than the diameter of each of the rollers received therein, said second surface being formed with a plurality of non-loaded roller grooves corresponding in number to said loaded roller grooves, each of said non-loaded roller grooves having a depth greater than the diameter of each of the rollers received therein, said second surface having at least three load-bearing land portions disposed on the opposite sides of each of said non-loaded roller grooves, the surfaces of all of said load-bearing land portions being flush with each other whereby they can be placed in



abutting engagement with the mounting surface of a structural member when said bearing body is fixedly mounted at its second surface on said structural member; and

a pair of end caps respectively secured to the opposite ends of said bearing body and each having a plurality of roller-turning passages interconnecting said loaded roller grooves and said non-loaded roller grooves.

4,620,752

MAGNETIC BEARING HAVING TRIAXIAL POSITION STABILIZATION

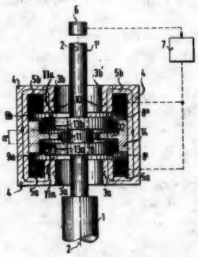
Johan K. Fremerey, Bonn, and Albrecht Weller, Steinbach, both of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Filed Mar. 13, 1985, Ser. No. 711,239

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1984, 3409047

Int. Cl.⁴ F16C *39/06*

U.S. Cl. 310—90.5 **20 Claims**



1. A magnetic bearing which has a movable means and means for supporting and maintaining said movable means in a bearing relationship with said means for supporting and maintaining, said magnetic bearing having an arrangement comprising:

flux means for producing substantially constant, invariant flux, said flux means having means for attachment thereof to said movable means of said bearing;

said flux means comprising at least two parts disposed along said movable means and being displaced one from the other;

means, being electrically conductive and being non-ferromagnetic and non-magnetizable, for conducting currents generated therein by said flux of said flux means, said electrically conductive means comprising at least one

rigid, substantially homogeneous, unitary element, only a sole element of said conductive means being disposed between any two of said at least two parts of said flux means, such that, a substantial portion of said flux of said flux means passes through at least a portion of said electrically conductive means and said at least two parts of said flux producing means;

said electrically conductive means being disposed to be displaced from and in a non-contacting relationship with said movable means and said flux means;

said electrically conductive means being disposed with respect to said movable means and said flux means, such as not to be movable with said movable means and said flux means;

said flux means and said electrically conductive means being disposed so that said flux, produced by said flux means, forms a flux path, at least a portion of said flux path passing through and between said two of said at least two parts of said flux means, said portion of said flux path having substantially one substantially straight component disposed along solely one substantially single continuous direction and further having a substantially constant total flux along said portion of said flux path;

each element having a component being disposed perpendicular to said one straight component of said portion of said flux path passing through and between said at least two parts of said flux means;

electric control coils for controlling movement of said movable means substantially parallel to said portion of said one straight component to said portion of said flux path passing through and between said at least two parts of said flux means;

sensor means for sensing positions of said movable part;

electronic amplifier means for amplifying signals from said sensor means;

said sensor means having means for connection thereof to said electronic amplifier means; and

said electronic amplifier means having means for being connected to said electric control coils for control thereof.

4,620,753

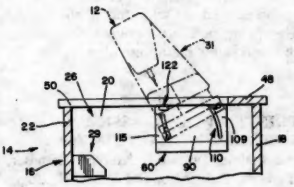
MULTIPOSITION ADJUSTMENT ARRANGEMENT FOR CABINET MOUNTING OF DOMESTIC APPLIANCES

Ralph Ogden, 1304 Fisher St., Munster, Ind. 46321

Filed Nov. 22, 1985, Ser. No. 800,818

Int. Cl.[4] A47B *81/00*

U.S. Cl. 312—29 **10 Claims**



1. In an applicance assembly that includes a parallepiped base on which the appliance is mounted, a quadrilateral shell having an open top forming a support for the appliance base, an appliance retracted position rest mounted on one side of the shell and projecting inwardly of same, with the appliance base being received within the shell adjacent the top thereof between the two shell sides that are normal to said one shell side, and means for adjustably mounting the base between said two sides of the shell for movement between upstanding positions at different levels in which the appliance base is horizontally disposed and the appliance is disposed exteriorly of the shell in upright operable positioning, and retracted positions in which the appliance engages the rest and the base is in depending relation from the shell,

the improvement wherein:

the mounting of the appliance on the base, and said mounting means, comprises:

the base having a pair of aligned pins fixed to said base adjacent the side of the base that faces away from the rest, with one of said fixed pins projecting from one end of the base and the other of said fixed pins projecting from the other end of the base,

with the base having mounted thereon adjacent the other side of the base a pair of aligned retractable pins, with one of said retractable pins projecting from said one end of the base and the other of said retractable pins projecting from said other end of the base,

said retractable pins being mounted for movement axially thereof toward each other to dispose them in withdrawn positions relative to the base ends, and including means for resiliently biasing same to their respective projecting positions and handle means for simultaneously moving same to their withdrawn positions,

with the appliance being fixed to the base above said pins,

and including a first bracket secured to one of the two shell sides between which the base is disposed in supporting relation to those said pins that are at one end of the base, and a second bracket secured to the other of such two shell sides in supporting relation to those of said pins that are at the other end of the base,

said brackets each including a vertical wall, with said brackets being secured to said shell in confronting relation, and said walls being in substantial parallelism and each being formed to define slot means in which said pins at either end of the base are received to support the appliance and base from the shell,

said slot means of one of said walls being a mirror image of said slot means of the other of said walls,

said slot means for each of said walls comprising, for the respective fixed pins, an upper horizontal slot portion having at the end of same projecting away from the one side of the shell a first appliance operating position seat adjacent a vertical stop surface, with said slot upper horizontal portion being open and connected to a curvilinear slot stem portion that arcs downwardly below said slot upper portion to a second appliance operating position pin seat substantially vertically aligned with said horizontal slot portion seat,

said brackets each including a horizontal wall rigid with respect to the respective brackets and disposed above said slot means slot portion,

said slot means for each of said walls comprising, for the respective retractable pins, an upper closed perimeter horizontal slot that is substantially level with said wall upper horizontal slot portions of said walls for said fixed pins, and having closed ends, with the end of same that is closest to said wall upper horizontal slot portion of the respective brackets forming a first appliance operation position seat, and an elongate curvilinear closed perimeter slot separated from and below the said closed perimeter upper horizontal slot of the respective walls and having its upper end substantially aligned with the other end of said closed perimeter upper slot and arcing downwardly to substantial vertical alignment with said closed perimeter slot seat, and thence defining a toe portion extending away from the wall fixed pin curvilinear stem slot portion that terminates in a second appliance operating position seat that is substantially level with said wall slot stem part pin seat,

whereby, when at each bracket said pins are seated in said appliance first operation position seats of the respective wall slot means, the appliance is in its first operating position, and when at each bracket said pins are seated in said second appliance operating position seats of the respective wall slot means, the appliance is in its second operating position,

with said retractable pins being retracted and then released to shift them between said separate slots of the respective walls defining said retractable pin slot means,

with said fixed pins seated in the respective first and second appliance operating seats of said fixed pin slot means, and with said retractable pins free of both their slots of their slot means, the appliance may be disposed in one of its retracted positions,

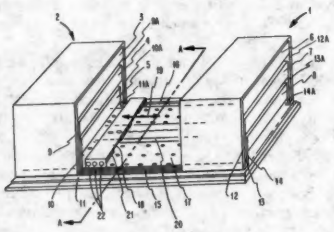
and with the weight of the appliance providing a rotational bias of the appliance in the direction of the rest, on release of said retractable pins, for assisting in the changing of the appliance between operating positions.

4,620,754

MAGAZINE FOR MATERIAL AND/OR TOOLS FOR ROBOT OR LIKE APPLICATIONS

Anders H. Lycke, Bromma, and Curt R. Soderquist, Kungsängen, both of Sweden, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 17, 1984, Ser. No. 611,556
Claims priority, application Sweden, May 20, 1983, 8302859
Int. Cl.[4] A47B *88/08*
U.S. Cl. 312—330 R **6 Claims**



1. A magazine for supplying materials such as parts to a robot or like system, characterized by:

a pallet;

two sets of drawers having a plurality of drawers in each set positioned so that the front of each set of drawers face one another on said pallet in a spaced relationship with an open space for the drawers to open into between said two sets;

a bottom member maintained parallel to said pallet and side walls and a front and back wall extending vertically upward from said bottom member to form each of said drawers;

side wall extensions forming part of said side walls extending downward below said bottom member of each of said plurality of drawers to said pallet;

means located at the bottom of each of said side wall extensions for cooperating with said pallet to allow said drawers to move into said open space between said sets of drawers;

selecting means associated with said side wall extensions for selecting anyone of said drawers in said sets of drawers for movement into said open space between said sets of drawers; and

motion means carrying said selecting means between said sets of drawers for moving the selected drawer from either set of drawers into said open space between said sets of drawers.

4,620,755

CABLE SHEATH CONNECTOR

John L. Yonkers, Northbrook, and Edward H. Yonkers, Wilmette, both of Ill., assignors to John L. Yonkers, Northbrook, Ill.

Filed May 7, 1984, Ser. No. 607,572
Int. Cl.[4] H01R *4/66*
U.S. Cl. 339—14 L **6 Claims**

1. A cable sheath connector for use with a communication cable of the type having a plurality of insulated metallic conductor wires held in cylindrical form by inner insulating plastic film wrapped tightly around said conductors and a thin metallic shield placed over the plastic film with a final outer protective insulating cover, said connector comprising:

(a) an inner base and stud member having an elongated base portion arced in cross section to conform to the inner surface of a metal shield of a communication cable, and a stud portion extending radially outwardly from said base portion;

(b) an outer clamp member a generally rectangular body portion elongated in the axial direction and arced in cross section to conform generally to the outer surface of a communication cable, said body portion having projections at its corners, said projections extending radially inwardly and converging inwardly to define axially and radially spaced projections, each of said projections being provided at its projecting tip with a flat contact contact surface adapted to penetrate the outer protective cover of a communication cable and to engage in metal to metal contact under resilient spring load with a metal shield and to apply and maintain compressive spring load on a metal shield clamped between said base and stud member and said outer clamp member without puncturing the metal shield; said body portion having a central aperture and assembled over said stud portion with said stud portion extending through said aperture; and

(c) nut means assembled on said stud portion for applying compressive spring pressure between said base and stud member and said outer clamp member.

4,620,756

PRINTED WIRING ASSEMBLY INSERTION/EXTRACTION TOOL

John E. Gatti, Scottsdale; Tammy C. Martin, Chandler, both of Ariz.; Jack P. Hall, Palo Alto, and Peter M. Fogg, Burlingame, both of Calif., assignors to Motorola Computer Systems, Inc., Cupertino, Calif.

Filed Dec. 13, 1985, Ser. No. 808,713
Int. Cl.[4] H01R *13/629*
U.S. Cl. 339—17 M **8 Claims**

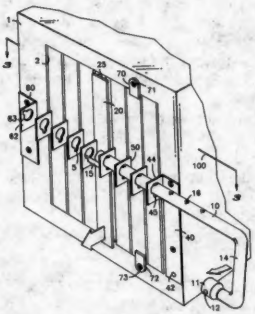
1. A printed wiring assembly card cage comprising:

a housing having at least one surface with an aperture therein;

a plurality of printed wiring assembly cards, said cards being adapted to fit into said housing aperture in a side-by-side arrangement, each of said cards having affixed to one edge thereof a tab centrally located between the ends thereof, each tab containing an asymmetrically-shaped aperture therein;

a support member positioned substantially at a right angle to said housing surface, said support member containing an aperture substantially identical to those of said tabs, said plurality of cards having said tab apertures aligned with said support member aperture when said plurality of cards are fully inserted in said housing; and

an insertion/extraction member having an end portion thereof of asymmetrically-shaped cross-section corresponding to said tab apertures;



whereby by selection of a suitable position of rotation of said insertion/extraction member about its axis, said insertion-/extraction member may be inserted through said support member aperture and through at least one of said tab apertures, and then by rotating said insertion/extraction member in the appropriate direction about its axis said end portion thereof may be suitably engaged with said tab aperture of a selected one of said cards to insert said card into said housing or to extract said card from said housing.

4,620,757

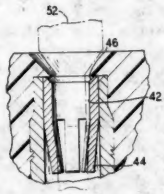
CONNECTOR SOCKET

Armand Thevenaz, Auliens, Switzerland, assignor to Brintec Systems Corporation, Chicago, Ill.

Filed Dec. 26, 1984, Ser. No. 686,461

Int. Cl.[4] H05K *1/00*

U.S. Cl. 339—17 C **1 Claim**



1. An electrical connector which comprises an insulator block having planar top and bottom faces with closely spaced bores therethrough connecting said faces, each bore having a conical lead-in mouth at the top face of the block and an elongated cylindrical portion of greater diameter than the inner end of the conical mouth together with a radial abutment shoulder between the top end of the cylindrical bore and the bottom end of the tapered mouth, a rigid machined tubular socket member in each bore with a top edge against the shoulder of the bore and having an outer diameter not less than the bore diameter for press fit engagement therewith and an inner diameter greater than the inner end of the tapered mouth thereby exposing the shoulder of the bore of the insulator block, said tubular socket member having a closed bottom end with a reduced diameter rigid pin extending beyond the bottom of the insulator block, a metal tubular contact element pressed into the upper end of the socket bore of each socket member with a top edge flush with the top edge of the socket member and bottomed against the exposed abutment shoulder, the combined thickness of the socket member and contact element being greater than the width of the radial abutment shoulder, the top end of said contact element being conically tapered to eliminate any internal abutment shoulder under the tapered mouth to cooperate with the tapered mouth for guiding an electrical component therein, the bottom end of said contact element having inwardly biased spring fingers for securing the electrical component in the socket member, and said reduced diameter pin end portion of the socket member extending beyond the bottom face of the insulator block in close relation with adjacent pins whereby the top face of the insulator block is free from projections, the tapered mouth and the tapered end of the tubular contact element in the tubular socket guide an electrical component into an engagement with the fingers and the projecting pins of the sockets provide closely spaced terminals.

4,620,758

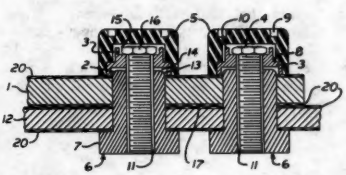
CONNECTING DEVICE FOR STIFF ELECTRIC CONDUCTORS

Pasquale Frola, Via Alcide Cervi, 41 Naples, Italy

Continuation of Ser. No. 586,936, Mar. 7, 1984, abandoned. This application Aug. 12, 1985, Ser. No. 764,524

Int. Cl.[4] H01R *4/38*

U.S. Cl. 339—22 B **3 Claims**



1. Busway structure comprising:

(a) at least two insulated bus members contacting each other from separate parallel planes;

(b) an aperture aligned through the bus members;

(c) a T-shaped bushing having an axial threaded bore and extending the length of the aperture;

(d) an O-ring cap placed axially with respect to the aperture and with respect to the bore in the bushing;

(e) a bolt positioned through the bushing with an integral head of the bolt in contact with a top surface of the O-ring cap and the remainder of the bolt mating with the threaded bore such that tightening the bolt will urge the O-ring cap toward the T-shaped bushing for firm engagement therebetween of the busing members and

(f) the top surface of the O-ring cap having an integral axially downward projecting rim sufficient to form a cavity to accept the head of the bolt and a bottom surface of the O-ring cap forming a U-shaped chamber for accepting an appendage from the T-shaped bushing.

4,620,759

PRELOADED ELECTRICAL CONNECTOR UTILIZING ANGULARLY GROUPED PAWLS FOR BOTH INDEXING AND LATCHING OF PLUG AND RECEPTACLE COMPONENTS

Ottomar H. Vetter, New Hope, Minn., assignor to TRW Inc., Redondo Beach, Calif.

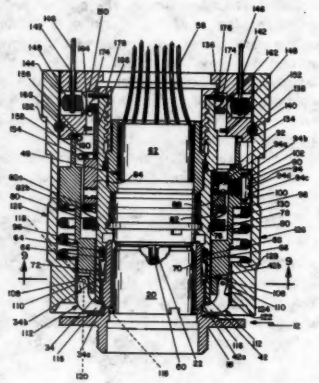
Filed Jun. 15, 1983, Ser. No. 504,410

Int. Cl.[4] H01R *13/62*

U.S. Cl. 339—45 M **23 Claims**

10. A releasable electrical connector comprising a first component including a first shell containing therein a plurality of

first contacts, said first shell having a plurality of longitudinally directed outer lands or keys near one end thereof forming angularly spaced grooves or keyways therebetween, a second component including a second shell containing therein a plurality of second contacts engageable with said first contacts, said second shell being of a size to receive therein said one end of said first shell, a carrier sleeve encircling said second shell



having a plurality of pivotal pawls adjacent one end thereof, said pawls thereof having portions longitudinally movable in at least some of said grooves and angularly shiftable into a latching engagement with at least some of said lands after said pawl portions have passed through said grooves, and means for restricting angular movement of said first shell relative to said second shell when said pawl portions are angularly shifted into said latching engagement.

4,620,760

ELECTRICAL CONNECTORS

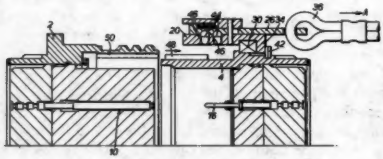
William C. W. Duncan, Northampton, England, assignor to Plessey Overseas Limited, Ilford, England

Filed Jan. 11, 1985, Ser. No. 690,528

Claims priority, application United Kingdom, Jan. 12, 1984, 8400760; Mar. 26, 1984, 8407800

Int. Cl.[4] H01R *13/62*

U.S. Cl. 339—45 M **5 Claims**



1. An electrical connector comprising:

a plug part and a socket part;

a screw thread means on the outer surface of one of the parts;

a coupling sleeve captive on the other of the parts, wherein the coupling sleeve is of annular cross section and is rotatable about the longitudinal axis of the other of the parts, and the coupling sleeve comprises circumferentially disposed apertures in which radially slidable arcuate segments are located, the arcuate segments each have an outwardly curved surface provided with one or more projections or ribs, an inwardly curved surface provided with one or more projections in the form of part of a helical thread, and at least one pair of opposite sloping sides which co-operate with corresponding sloping sides of the circumferentially disposed apertures to limit inward radial movement of the arcuate segments within the connector;

a retaining sleeve which is movable relative to the arcuate segments, which retaining sleeve, when moved into one position, butts against the one or more projections or ribs on the outwardly curved surface of the arcuate segments and restrains the arcuate segments from sliding so that the projections on the inwardly curved surface of each of the arcuate segments engage the screw thread means when the plug part and the socket part are connected, and when moved into another position allows the arcuate segments to slide away from the screw thread means, thereby enabling the plug part and the socket part to be disconnected; and

a thrust washer disposed between the coupling sleeve and said other of the parts, which thrust washer is provided with a ratchet means operative to permit rotation of the coupling sleeve in one direction with a lower torque than that required to effect rotation of the coupling sleeve in the opposite direction.

4,620,761

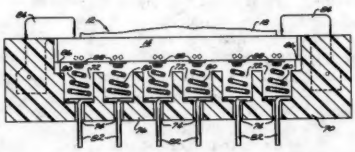
HIGH DENSITY CHIP SOCKET

Brian M. Smith, Mansfield, and Emanuel D. Torti, Boston, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 30, 1985, Ser. No. 696,663

Int. Cl.[4] H01R *9/09*

U.S. Cl. 339—75 MP **4 Claims**



1. An interconnection device comprising:

a socket body formed of electrically insulative material, the body having a top portion and a bottom wall, a generally planar seating surface formed in the top portion, the surface extending in an X and Y direction, a pattern of recesses formed in the body extending from the seating surface to the bottom wall, a respective pin receiving aperture formed in the bottom wall in communication with each recess,

an electrically conductive coiled contact spring having first and second ends received in each recess with the first end seated on the bottom wall, an electrically conductive pin extending from the first end of each contact spring through a respective aperture, the second end of the contact spring in its at rest position extending above the planar seating surface in a Z direction,

a generally plate like module having a plurality of electrically conductive pads formed on a bottom surface of the module, the pads arranged in a pattern matching that of the recesses, the module receivable on the generally planar seating surface,

reference surface means to assure proper location of the module relative to the socket body so that the pattern of electrically conductive pads is aligned with the pattern of recesses, and

means to lock the module tightly against the planar seating surface with the springs depressed and in electrically conductive relationship with the pads,

characterized in that the coiled springs are conical in configuration, the first end of the coiled springs forming the base of the conical configuration and being closely conformed

to the wall surfaces defining the recesses in which the springs are received, whereby movement of the contact springs is limited essentially to the Z direction for greater accuracy in alignment of the contact springs with the conductive pads.

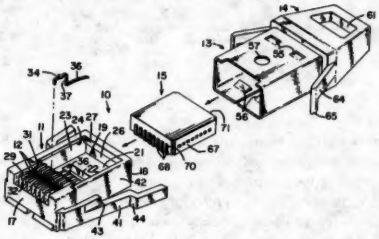
4,620,762
ELECTRONIC KEY ASSEMBLIES

Wayne S. Davis, Harrisburg; George R. Defibaugh, Camp Hill, and Jon A. Fortuna, New Cumberland, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 669,554, Nov. 8, 1984, abandoned, which is a continuation-in-part of Ser. No. 661,498, Oct. 16, 1984, abandoned. This application Jul. 31, 1985, Ser. No. 761,344

Int. Cl.[4] H01R *13/648*

U.S. Cl. 339—91 R **7 Claims**



1. An electronic key assembly comprising an insulating plug body moulded from plastics material having a front, mating end for receipt in a jack and a rear end and formed with a chip carrier receiving cavity spaced rearwardly from the mating end;

a row of contact receiving recesses extending rearwardly from the mating end along a side of the body towards the cavity;

a series of contacts having first contact portions mounted in the recesses for engagement with spring contacts of a complementary jack and second spring contact portions extending into the cavity for engagement with respective leads of a chip carrier received in the cavity;

releasable latch arm means extending rearwardly from the mating end; and,

a sleeve-form shield receivable on the body surrounding the rear end and extending forwardly over the cavity to the mating end thereby completely to enclose and shield the chip carrier in the cavity, the shield including a forwardly extending flap formed with a window, a rim of which window is deformable to extend along the side of the body and along the mating end surrounding the first contact portions of the series of contacts so that they are in registration with the window.

4,620,763
CONNECTOR APPARATUS FOR CONNECTING HIGH-TENSION CABLE

Hideyuki Mochida, Yokosuka, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 3, 1984, Ser. No. 576,907

Claims priority, application Japan, Feb. 4, 1983, 58-14331[U]

Int. Cl.[4] H01R *4/00*

U.S. Cl. 339—94 R **2 Claims**

1. A connector apparatus for connecting a high tension cable having an elongated conductor through which a current flows under a high voltage, an insulating coat disposed around said conductor so as to enclose said conductor, and an electric contact connected to an end portion of said conductor, said connector apparatus comprising:

(a) a tubular isolating wall made of an insulating resin material and having a predetermined inner diameter and a tapered rim formed in the inner surface thereof, said tubular isolating wall having an exterior surface formed with a male thread;

(b) a cylindrically shaped packing made of a resilient insulating resin material having an aperture of a diameter slightly smaller than the diameter of said high tension cable which is inserted through said aperture, said packing having an outer wall formed with a plurality of ring-like ridges each having a diameter slightly greater than the inner diameter of said tubular isolating wall, said packing having a tapered portion formed at one end thereof, said tapered portion being brought into contact with said rim of said tubular isolating wall upon insertion of said packing within said tubular isolating wall, a length of said packing, as measured from the tapered portion to the other end portion being slightly longer than a length of said tubular isolating wall as measured from said tapered rim to the end portion of said tubular isolating wall;

(c) a coil-like contact formed of a metal wire, said coil-like contact including:

(1) a cylindrical portion having an outer diameter smaller

than the inner diameter of said tubular isolating wall and having an inner diameter greater than the outer diameter of said electrical contact connected to the end portion of said conductor, said electric contact of said high tension cable being inserted in said cylindrical portion so that said cylindrical portion is electrically connected to the conductor of said high tension cable,

(2) a resilient coiled spring portion being contigious to said cylindrical portion,

(3) a terminal portion contigious to said coiled spring portion and constituting an electric terminal for the high tension current;

(d) supporting means holding said coil-like contact for supporting said coil-like contact against said tubular isolating wall; and

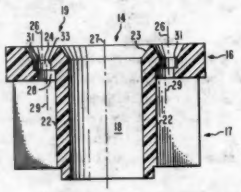
(e) a cap of an insulating resin, said cap having an inner diameter slightly greater than the outer diameter of said tubular isolating wall and having an aperture through which said high tension cable extends, and an inner wall formed with a female thread, said cap being fitted onto said tubular isolating wall and being threadably engageable with said tubular isolating wall, an inner end face of said cap urged against an end face of the other end portion of said packing such that, upon rotation of said cap, said packing is reduced in axial length to become substantially equal to said length of said tubular isolating wall.

4,620,764

PIN BIASING BASE FOR ELECTRON TUBES

Myron H. Wardell, Jr., Lititz, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Jul. 11, 1985, Ser. No. 753,927
Int. Cl.[4] H01R *33/76*
U.S. Cl. 339—145 T **3 Claims**



1. A base for an electron tube having an exhaust tubulation and a plurality of connection pins arranged radially about said tubulation, said base comprising:

an entry portion for receiving said tubulation and said connection pins, and a retention portion for retaining said base on said tube;

said entry portion including a center bore for receiving said tubulation, a plurality of apertures radially spaced about said bore for individually receiving said pins, said apertures being configured to bias said pins inwardly toward said bore as said pins pass through said apertures;

said retention portion being integral with said entry portion, and having a bore coaxial with said center bore and substantially equal in diameter to said center bore, said retention portion including a plurality of longitudinal grooves aligned with said apertures, each of said grooves having a longitudinal retention surface substantially parallel to said bore whereby said pins are biased against said retention surface to help retain said base on said tube;

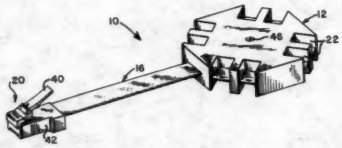
at least one of said apertures including a first section having a first axis substantially parallel to said center bore, and a second section having a second axis substantially parallel to said center bore, said second axis being closer to said center bore then said first axis to form a shoulder, said first and second sections being in communication whereby said pins pass through said sections and are biased by said shoulder against said retention surface.

4,620,765

EIGHT CONDUCTOR MODULAR TEST ADAPTER

Robert H. Knickerbocker, Chesire, Conn., assignor to The Siemon Company, Watertown, Conn.

Filed Jul. 26, 1984, Ser. No. 634,817
Int. Cl.[4] H01R *13/50*
U.S. Cl. 339—154 A **27 Claims**



1. A modular plug ended adapter comprising:

an electrically insulating housing;

eight electrically conductive contacts partially encased by said housing, each of said contacts being electrically isolated from the others of said contacts, a portion of each contact being exposed exterior of said housing said housing having a top surface, a bottom surface parallel to said top surface, and a plurality of opposing side surfaces between said top and bottom surfaces, at least one of said exposed contact portions being exposed at two or more of said side surfaces whereby, said exposed contact portions present substantially flat contact areas for connection with a testing device; and

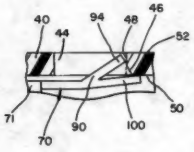
eight wire conductors leading from said housing, a first end of each of said eight conductors being mechanically and electrically connected to one of each of said contacts.

4,620,766

TERMINAL WITH IMPROVED RETENTION MEANS

Russell J. Leonard, Downers Grove, Ill., assignor to Molex Incorporated, Lisle, Ill.

Filed Apr. 1, 1985, Ser. No. 718,413
Int. Cl.[4] H01R *13/432*
U.S. Cl. 339—217 S **4 Claims**



1. An electrical terminal for mounting in a dielectric housing, said housing including a terminal receiving cavity having a longitudinally extending wall having a window formed therein with a rear edge, an interior corner formed between the longitudinally extending cavity wall and the rear window edge, said terminal including a body having a front end, a rear end and a rearwardly canted locking lance extending at a given angle from said body, said lance adapted to cooperate with said window when the terminal is fully inserted in said cavity to prevent withdrawal of said terminal from said housing cavity, the improvement in said terminal comprising:

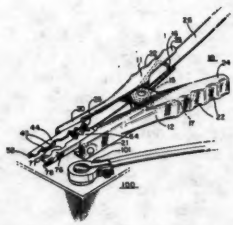
said lance including first and second lance portions extending at different angles relative to said terminal body, whereby said interior corner is adapted to be received between said two lance portions, said first lance portion engaging said rear window edge and said second lance portion engaging said longitudinally extending cavity wall to prevent withdrawal of said terminal from said housing cavity.

4,620,767

COMBINATION BATTERY BOOSTER CABLE CONNECTOR

Harold L. Woolf, Philadelphia, Pa., assignor to East Penn Manufacturing Co., Inc., Lyon Station, Pa.

Filed Feb. 21, 1985, Ser. No. 703,727
Int. Cl.[4] H01R *11/22*
U.S. Cl. 339—255 P **4 Claims**



1. A combination battery booster cable connector for con-

nection to a top terminal battery and a side terminal battery which comprises

a pair of clamp halves hingedly secured together,

said clamp halves having front and rear ends,

resilient means carried by said halves urging said front ends of said clamp halves together,

gripping means carried on said front ends of said clamp halves for gripping a side terminal bolt of a side terminal battery,

said gripping means including a side terminal gripping plate carried by and extending forwardly from the front end of each of said clamp halves in opposing relation,

said side terminal plates each having notches to engage a groove of said side terminal bolt in cooperating gripping engagement therebetween,

means for gripping a battery cable terminal of a top terminal battery carried by said halves,

said top terminal gripping means including a pair of opposed jaws extending from the front ends of said halves, for gripping engagement with said battery cable terminal.

4,620,768

OPTICAL SCANNING SYSTEM

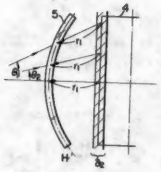
Kimio Tatsuno, Kokubunji; Keiji Kataoka, Kawagoe; Yoshifumi Homma, Hitachi, and Yoshifumi Ono, Katsuta, all of Japan, assignors to Hitachi, Ltd. and Hitachi Koki Co., Ltd., both of Tokyo, Japan

Filed May 12, 1983, Ser. No. 494,076

Claims priority, application Japan, May 19, 1982, 57-83083

Int. Cl.[4] G02B *27/17, 7/02*

U.S. Cl. 350—6.8 **9 Claims**



1. An optical scanning system having means for reflecting a light beam by a rotating polygonal mirror to produce a scanning light beam, lens means for focusing said light beam onto a scanning surface, and a cylindrical lens disposed between said scanning surface and said focusing lens means, said cylindrical lens having a curvature in the scanning direction of said light beam with a concave side of said cylindrical lens facing said scanning surface to provide a substantially constant path of said light beam as measured from said cylindrical lens to said scanning surface wherein the unevenness of the scanning pitch due to an incline of each facet of mirrors of said polygonal mirror is corrected by said curved cylindrical lens.

4,620,769

IMAGE OBSERVATION SYSTEM

Koichi Tsuno, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Dec. 23, 1983, Ser. No. 564,928

Claims priority, application Japan, Dec. 29, 1982, 57-232458

Int. Cl.[4] G02B *6/06*

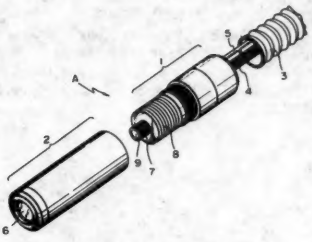
U.S. Cl. 350—96.26 **6 Claims**

1. An image observation system which comprises:

an image fiber for transmitting an image;

an image pick-up adapter mounted on one end of said image fiber and having an image pick-up lens unit for forming an image of an observed object on an end face of said image fiber, and bellows means capable of expansion and contraction, for displacing said image pick-up lens unit relative to the end face of said image fiber while the optic axis of said image pick-up lens unit is held substantially perpendicular to said end face;

a picture receiving adapter mounted on the other end of said image fiber for observing or photographing an image transmitted to the other end of said image fiber;



a fluid pressure drive adapter for varying fluid pressure internally of said bellows for expanding and contracting said bellows; and

a fluid transfer tube communicating said fluid pressure drive adapter and said bellows.

4,620,770

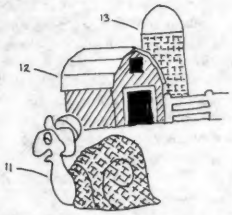
MULTI-COLORED ANAGLYPHS

Howard Wexler, 300 E. 40th St., New York, N.Y. 10016

Continuation-in-part of Ser. No. 545,299, Oct. 25, 1983, abandoned. This application Mar. 30, 1984, Ser. No. 594,442

Int. Cl.[4] G02B *27/22*

U.S. Cl. 350—132 **13 Claims**



1. A method of making a colored anaglyphic picture that will appear both three-dimensional and in color when viewed through glasses having a first lens colored approximately blue and a second lens colored approximately red, the method comprising:

(a) preparing on a background a first outline representation of an object, the first outline being printed with a colored ink selected from the group consisting of ink approximately orange in color and ink approximately red in color;

(b) preparing on the same background, a second outline representation of the object, the second outline representation having the same shape as the first representation but being printed with a colroed ink selected from the group consisting of ink approximately green-blue in color and ink approximately blue in color, and being horizontally shifted on the background relative to the first outline of said object;

(c) viewing the anaglyph through first glasses having both lenses approximately blue in color;

(d) while viewing the anaglyph through the first glasses, coloring the interior portions of the orange or red outline, of said object, in a color other than the color of the orange or red outline, which outline when so viewed will stand out relative to the green-blue or blue outline;

(e) viewing the 3-D anaglyph through second glasses having

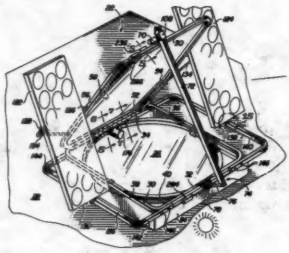
a first lens colored approximately blue and a second lens colored approximately red; whereby the object will appear both 3-dimensional and in color.

4,620,771

COMBINED SOLAR TRACKING REFLECTOR AND PHOTOVOLTAIC PANEL

Richard L. Dominguez, Phoenix, Ariz., assignor to So-Luminaire Systems Corp., San Diego, Calif.

Filed Sep. 6, 1984, Ser. No. 648,185
Int. Cl.[4] G02B *17/00*; F24J *2/38*; H01L *25/00*; H02N *6/00*
U.S. Cl. 350—258 18 Claims



1. A solar lighting reflector apparatus for illuminating the interior of a roofed building during daylight hours and adapted to track daily movements of the sun, said solar lighting reflector apparatus being further adapted to generate electrical power, the roofed building having a light transmissive opening in the roof therein, said apparatus comprising in combination:

(a) a lower frame member having a central opening substantially commensurate in size with said light transmissive opening, said lower frame member having opposing front and rear portions;

(b) support means coupled to the roof of the building for supporting said lower frame member above said light transmissive opening in a generally horizontal position, said support means permitting said lower frame member to rotate in a substantially horizontal plane;

(c) a reflective surface for reflecting solar light through said light transmissive opening;

(d) an upper frame member for supporting said reflective surface, said upper frame member having opposing front and rear portions, the rear portion of said upper frame member being pivotally coupled to the rear portion of said lower frame member between a substantially horizontal closed position wherein said reflective surface overlies and shades said light transmissive opening and an upwardly extending opened position wherein said reflective surface reflects solar light through said light transmissive opening;

(e) motor means for rotating said lower frame member and for pivoting said upper frame member between said said opened and closed positions;

(f) control means coupled to said motor means and responsive to the presence and position of the sun for causing said motor means to track daily movements of the sun;

(g) at least one photovoltaic panel coupled to said lower frame member for rotation therewith and for allowing said photovoltaic panel to track daily movements of the sun, said photovoltaic panel being disposed at an angle for generally facing the sun and directly receiving solar light whenever solar light is reflected by said reflective surface through said light transmissive opening, said photovoltaic panel providing electrical power when illuminated by solar light; and

(h) means electrically coupled to said at least one photovoltaic panel for deriving electrical power therefrom.

4,620,772

LIQUID CRYSTAL DISPLAY PLASTIC CELL STRUCTURE

Toshihiko Sugimoto; Yozo Oishi; Suguru Yamamoto, and Masaaki Kawaguchi, all of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 5, 1984, Ser. No. 657,992
Claims priority, application Japan, Feb. 16, 1984, 59-28358
Int. Cl.[4] G02F *1/13*
U.S. Cl. 350—337 6 Claims

1. A liquid crystal display plastic cell structure free of deviation in position of electrode patterns comprising:

a cell substrate comprising a polarizing plate and an electrode pattern provided on the surface of the polarizing plate, said polarizing plate being produced by laminating a monoaxially stretched film on both surfaces of a polarizer in such a manner that the absorption axis of the polarizer is in parallel with the stretching axis of the monoaxially oriented films;

a cell substrate comprising a polarizing plate and an electrode pattern provided on the surface of the polarizing plate, said polarizing plate being produced by laminating a monoaxially stretched film on both surfaces of a polarizer in such a manner that the absorption axis of the polarizer is at right angles to the stretching axis of the monoaxially stretched films; and

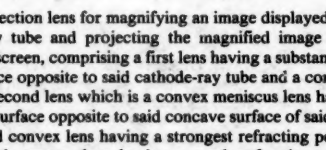
a liquid crystal sealed between the cell substrates, wherein the stretching axes of the monoaxially stretched films are in parallel with each other.

4,620,773

PROJECTION LENS FOR PROJECTION TELEVISION

Kyohei Fukuda, Fujisawa, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 13, 1983, Ser. No. 494,447
Claims priority, application Japan, May 15, 1982, 57-82278; Feb. 25, 1983, 58-29319
Int. Cl.[4] G02B *13/18*, *9/34*, *27/18*
U.S. Cl. 350—432 4 Claims



1. A projection lens for magnifying an image displayed on a cathode-ray tube and projecting the magnified image on a projection screen, comprising a first lens having a substantially plano surface opposite to said cathode-ray tube and a concave surface, a second lens which is a convex meniscus lens having a concave surface opposite to said concave surface of said first lens, a third convex lens having a strongest refracting power, and a fourth convex lens having a weak refractive power which is spaced apart by a predetermined distance from said third lens, said first to fourth lenses being arranged in the above order, said predetermined distance between said third and fourth lenses being large enough to permit interposition of a plano reflecting mirror therebetween;

wherein the radius of surface curvature, clear aperture, axial distance between surfaces, index of refraction and aspherical coefficient have the values shown in the following tables respectively, and the f-number is 0.95:

Lens	Surface	Surface radius (mm)	Clear aperture (mm)	Distance between surfaces (mm)	Refraction index
First lens	S_1	∞	127.0	5.0	1.4936
	S_2	64.0	90.0	51.0	1.0
Second lens	S_3	−100.0	100.0	20.0	1.4936
	S_4	−80.8	120.0	1.11	1.0
Third lens	S_5	230.0	118.0	32.0	1.4936
	S_6	−101.1	116.9	115.0	1.0
Fourth lens	S_7	∞	130.0	10.0	1.4936
	S_8	−242.7	130.0		

where S_1, S_3, S_5, and S_7 indicate the surfaces of the respective lenses on the side of said cathode-ray tube, and S_2, S_4, S_6 and S_8 indicate the other surfaces of the respective lenses;

Surface	Aspherical Coefficient CC	AD	AE	AF	AG
S_2	−0.30	7.57×10^{-7}	1.38×10^{-10}	-1.70×10^{-13}	1.02×10^{-16}
S_3	0	-1.01×1^{-6}	8.43×10^{-10}	-4.95×10^{-13}	1.17×10^{-16}
S_6	0	-1.16×10^{-7}	2.94×10^{-11}	-3.76×10^{-16}	1.99×10^{-19}
S_8	−1.96	3.42×10^{-8}	2.68×10^{-11}	-4.74×10^{-15}	4.01×10^{-19}

wherein the aspherical coefficients CC, AD, AE, AF and AG are those included in the following equation which represents the axial displacement Z at a semi-aperture distance r from the optical axis of the lens:

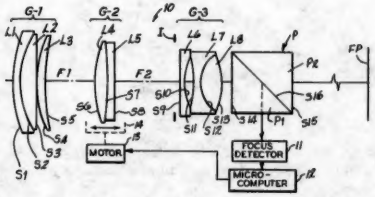
$$Z = \frac{C \cdot r^2}{1 + \sqrt{1 - (1 + CC)C^2r^2}} + AD \cdot r^4 + AE \cdot r^6 + AF \cdot r^8 + AG \cdot r^{10}$$

where C is the reciprocal of the radius of curvature at the optical axis.

4,620,774
INTERNAL FOCUSING LENS

Jacob Moskovich, Cincinnati, Ohio, assignor to Vivitar Corporation, Santa Monica, Calif.

Filed Oct. 12, 1984, Ser. No. 660,291
Int. Cl.[4] G02B 7/04, 9/60
U.S. Cl. 350—461 **17 Claims**

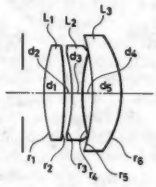


1. A lens comprising from the object end a first positive group, a second positive group and a third negative group, said first and third groups being widely spaced, said second group being axially movable to focus said lens while said first and third groups are stationary, said third group consisting of a negative element at the object end followed by a doublet comprising a biconcave element and a biconvex element.

4,620,775
FRONT-DIAPHRAGM WIDE ANGLE LENS

Yoshisato Fujioka, Higashikurume, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Sep. 26, 1985, Ser. No. 780,574
Claims priority, application Japan, Sep. 26, 1984, 59-199526
Int. Cl.[4] G02B 9/16
U.S. Cl. 350—449 **4 Claims**



1. A front-diaphragm wide angle lens comprising, successively from a object side, a first lens L_1 comprising a double convex positive lens, a second lens L_2 comprising a double concave negative lens, and a third lens L_3 comprising a meniscus positive lens with a convex surface thereof directed toward an image side,

the following conditions are met:

$$1.15 < r4/|r3| < 2.5$$

$$0.7 < |r5|/r4 < 1.2$$

$$0.5 < |r6|/r1 < 0.7$$

$$0.2f < \Sigma d < 0.28f$$

$$0.03f < d_2 + d_4 < 0.09f$$

r_i: radius of curvature of a refractive surface of the i^{th} from the object side

d_i: thickness of lens or space of lens of the i^{th} from the object side

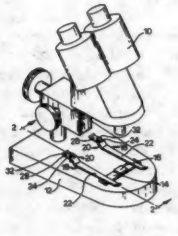
Σd: full length of lens

f: focal length of the entire lens system.

4,620,776
MICROSCOPE SPECIMEN SLIDE CLIP

Toshio Ima, 2-38-5 Aobacho, Higashimurayama, Tokyo, Japan

Filed Nov. 26, 1984, Ser. No. 674,554
Int. Cl.[4] G02B 21/26
U.S. Cl. 350—529 **6 Claims**



1. A microscope slide clip adapted to be mounted on a slide supporting surface of a microscope, and adapted to releasably hold a slide on said slide supporting surface of said microscope

for viewing with said microscope, wherein said microscope slide clip comprises:

a clip blade means for releasably holding said slide;

a resilient means; and

a brace means for mounting said clip blade means and said resilient means to said slide supporting surface of said microscope;

wherein said brace means is oriented generally at a right angle with respect to said slide supporting surface of said microscope;

wherein said contoured clip blade means comprises a forwardly extending holding portion for releasably holding said slide, a rearwardly extending actuating portion and an intermediate pivot portion;

wherein said resilient means is located between said slide supporting surface of said microscope and said clip blade means, and wherein said pivot portion of said clip blade means is resiliently supported by said resilient means;

wherein said resilient means and said forwardly extending holding portion of said clip blade means are shaped and sized to enable said holding portion of said clip blade means to hold said slide when said rearwardly extending actuating portion of said clip blade means is not depressed by a user; and

wherein said resilient means and said rearwardly extending actuating portion of said clip blade means are shaped and sized to permit said user to easily depress said rearwardly extending actuating portion of said clip blade means with his finger to cause said clip blade means to pivot vertically on said resilient means to cause said forwardly extending holding portion of said clip blade means to raise clear of and release said slide to permit said slide to be inserted or removed from beneath said forwardly extending holding portion of said clip blade means.

4,620,777

SIDEVIEW MIRROR WITH SPRING-LOADED WATER SHIELD FOR VEHICLE

Tsai Y. Nu, 1st Fl., No. 9, Alley 73, Lane 75, Sec. 4 Nan Chin E. Rd., Taipei, Taiwan

Filed Apr. 1, 1985, Ser. No. 718,456
Int. Cl.[4] G02B *5/10, 7/18*
U.S. Cl. 350—582 **1 Claim**

1. A sideview mirror for a vehicle comprising:

a stand adapted to be attached to one side of the vehicle;

a frame rotatably mounted on said stand, said frame being formed on the top with two holes;

a reflecting mirror mounted in said frame, said reflecting mirror being formed so that it first curves inwards in one-third of the surface thereof and then extends linearly in the remaining surface thereof; and

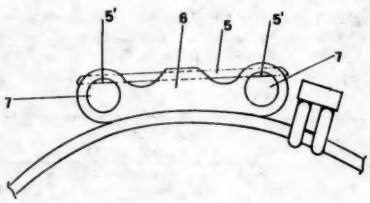
a spring-loaded water shield having a raised portion slidably fitted in upper part of said frame, the raised portion of said water shield being formed with a hole in which there is a spring-loaded ball having a diameter larger than that of the hole of said frame, said ball being designed so that part of the ball will protrude from the hole of said frame when the hole of the raised portion of said water shield is aligned with the hole provided on the top of said frame thereby fixing said water shield in position.

4,620,778

FRAME FOR GLASSES WHICH PERMITS THE MOUNTING OF ACCESSORY ELEMENTS

Lino Bertolli, Schio, Italy, assignor to Ellebi s.a.s. Di Lino Bertolli Friglio & C, Vicenza, Italy

Filed Mar. 21, 1985, Ser. No. 714,280
Claims priority, application Italy, Jul. 25, 1984, 64368/84[U]
Int. Cl.[4] G02C *11/02*
U.S. Cl. 351—51 **1 Claim**



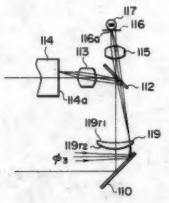
1. A frame for glasses and an accessory structure, wherein the frame has in the front portion a hooking means for mounting said accessory structure, said hooking means comprising a supporting element which is fixedly connected to said frame, a rod which is sunk in the central portion of said supporting element, said supporting element having at its ends two orifices, said accessory structure having a pair of pins, said pins entering within said orifices when the accessory structure is mounted onto the frame, said rod having terminal portions, said pins having grooves, the terminal portions of said rod entering the external portion of said orifices and being seated in said grooves, thus holding the pins of the accessory structure firmly within said orifices.

4,620,779

OPHTHALMOLOGIC APPARATUS

Isao Matsumura, Yokosuka, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 509,771, Jun. 30, 1983, abandoned. This application Jan. 14, 1985, Ser. No. 691,363
Claims priority, application Japan, Jul. 7, 1982, 57-119063
Int. Cl.[4] A61B *3/10*
U.S. Cl. 351—211 **5 Claims**



1. An ophthalmologic apparatus comprising:

an illuminating system for illuminating an eye to be examined;

an observation optical system;

observation means for observing the fundus of the eye to be examined through said observation optical system;

a field lens having a partially-reflective curved lens surface, said lens surface being disposed at a position conjugate with the fundus of the eye to be examined with respect to said observation optical system;

light dividing means provided between said field lens and said observation means for forming a first optical path directed toward said observation means and a second optical path branching off from said first optical path;

a target provided in said second optical path and being capable of being perceived by the eye to be examined;

a first lens for imaging said target in the vicinity of said curved lens surface of said field lens; and

a second lens provided in said first optical path for focusing on said observation means a light beam which is incident on said curved lens surface from said target through said first lens and then is reflected by said curved lens surface, an entrance pupil of said second lens being at a position conjugate with an exit pupil of said first lens with respect to said curved lens surface so that any effective light beam from said target through said first lens, including an off-optical axis light beam, is directed back toward said observation means through said second lens.

4,620,780

MOUNT ARRANGEMENT AND INTERCHANGEABLE LENS UNIT FOR PHOTOGRAPHIC CAMERA

Yukio Maekawa; Tsuneyo Metabi, and Masatake Niwa, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

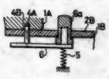
Continuation of Ser. No. 645,939, Aug. 30, 1984, Pat. No. 4,536,071. This application Jun. 25, 1985, Ser. No. 748,647

Claims priority, application Japan, Sep. 2, 1983, 58-162362

The portion of the term of this patent subsequent to Aug. 20, 2002, has been disclaimed.

Int. Cl.[4] G03B *17/00*

U.S. Cl. 354—286 **5 Claims**



1. In a lens interchangeable photographic camera capable of automatic diaphragm control and including a bayonet mount device which is adapted to mount and demount an interchangeable lens unit to and from a camera body through predetermined angle clockwise rotation and counterclockwise rotation of said lens unit relative to said camera body as viewed from the front of said camera, respectively, a mount arrangement comprising:

a lens unit mount member fixedly provided on said lens unit, and having bayonet claws formed at a rearmost portion of said lens unit and an annular mount face formed forwardly of said bayonet claws;

a camera body mount member fixedly provided on said camera body, and having an annular mount face formed at a forwardmost portion of said camera body so as to be brought into contact with said mount face of said lens unit mount member with the mounting of said lens unit on said camera body completed and bayonet claws formed rearwardly of said mount face of said camera body mount member so as to be engageable with said bayonet claws of said lens unit mount member, said bayonet claws of said lens unit mount member and said bayonet claws of said camera body mount member constituting said bayonet mount device;

a positioning recess formed on said mount face of said lens unit mount member at an immediate left side portion of said lens unit mount member as viewed from the rear of said lens unit with the mounting of said lens unit on said camera body completed;

a positioning member provided on said mount face of said camera body mount member at an immediate right side portion of said camera body mount member and urged to project from said mount face of said camera body mount member for engaging said positioning recess with the mounting of said lens unit on said camera body completed;

lens unit electrical contacts provided along the inner peripheral side of the upper portion of said lens unit mount member with the mounting of said lens unit on said camera body completed and arranged rearwardly of said mount face of said lens unit mount member and forwardly of the rear faces of said bayonet claws of said lens unit mount member;

camera body electrical contacts provided along the inner peripheral side of an upper portion of said camera body mount member and arranged rearwardly of said mount face of said camera body mount member so as to be brought into contact with said lens unit electrical contacts with the mounting of said lens unit on said camera body completed for signal transmission between said lens unit and said camera body:

a diaphragm interlocked member for the automatic diaphragm control, provided at the inner peripheral side of a left side portion of said lens unit mount member as viewed from the rear of said lens unit with the mounting of said lens unit on said camera body completed and having a rear end portion arranged rearwardly of said mount face of said lens unit mount member and forwardly of said lens unit electrical contacts so as not to interfere with said camera body electrical contacts during the start and the course of the mounting of said lens unit on said camera body; and

a diaphragm operating member for the automatic diaphragm control, provided at the inner peripheral side of a right side portion of said camera body mount member as viewed from the front of said camera body and having a front end arranged rearwardly of said mount face of said camera body mount member and forwardly of said electrical contacts for said camera body, said rear end portion of said diaphragm interlocked member and said front end portion of said diaphragm operating member being engageable with one another with the mounting of said lens unit on said camera body completed.

4,620,781

IMAGE PROCESSING APPARATUS FOR DETECTING SIZE OF THE ORIGINAL

Koichi Miyamoto, Tama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1983, Ser. No. 537,679

Claims priority, application Japan, Oct. 12, 1982, 57-179428

Int. Cl.[4] G03G *15/00*

U.S. Cl. 355—3 R **19 Claims**

1. An image processing apparatus comprising:

a supporting surface for supporting an original;

means for illuminating the original supported by said supporting surface, said illuminating means being movable relative to the original;

a covering member for covering the back face of the original supported by said supporting surface, said covering member having a specular reflection surface opposed to said supporting surface;

means for providing a visualized image corresponding to the original on a recording material at a predetermined station;

means for conveying the recording material to said predetermined station;

light detecting means for generating an electric signal corresponding to the amount of light receiving thereby, said light detecting means being so arranged that it receives light emitted from said illuminating means and scatteredly reflected by said original, and does not substantially receive light emitted from said illuminating means and specularly reflected by said specular reflection surface; and

means for controlling said conveying means in response to the signal produced by said light detection means to move the recording material to said predetermined station in such a manner that the leading edge of the recording material is brought into a predetermined positional relationship with the leading edge of said visualized image.

4,620,782

AUTOMATIC DOCUMENT FEEDER

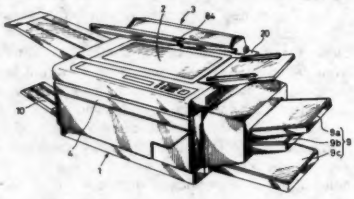
Shigeo Kurando, Takatsuki; Katsumi Amakawa, Yamatotakada, and Yoshizo Kawamori, Fujiidera, all of Japan, assignors to Mita Kogyo Kabushiki Kaisha, Japan

Filed Jul. 17, 1984, Ser. No. 631,678

Claims priority, application Japan, Jul. 18, 1983, 58-132056; Jul. 18, 1983, 58-132057; Jul. 18, 1983, 58-132058

Int. Cl.[4] B65H *5/02, 7/14*

U.S. Cl. 355—14 SH **6 Claims**



1. An automatic document feeder adapted to automatically feed at least one document to a copying machine having a motor, clutch means for selectively transmitting power from the motor, a document platen, input means for receiving input commands from an operator, display means, and means for providing a warm-up signal for a predetermined time after the copying machine is energized, said document feeder comprising:

means defining an original document path, including a document supply section having supply rollers for advancing a supplied document through the supply section, a belt feed section for receiving the supplied document from the supply section and transferring the document to a predetermined position on the platen, a document discharge section having discharge rollers for receiving the document from the belt feed section and discharging the supplied document from the copying machine, and means attaching at least the belt feed section for pivotal movement between an opened position and a closed position with respect to the platen;

document detecting means for detecting the presence or absence of a supplied document, said detecting means including a first detector for detecting a document at the supply section and providing a first detector signal indicative thereof, and a second detector for detecting a document at the discharge section and providing a second detector signal indicative thereof;

discriminating means for discriminating between manual and automatic document modes in response to an input command at said input means while the belt feed section is in the closed position, said discriminating means generating a first discriminating signal upon closure of said belt feed section and a second discriminating signal upon receipt of a predetermined input from said input means;

a pulse generator for generating signal pulses proportional to the speed of the motor; and

control means for controlling said automatic document feeder, said control means including

(a) receiving means for receiving said signals from said document detecting means, said discriminating means, said warm-up signal providing means and said pulse generator, and

(b) processing means having a counter for counting said pulses received by said receiving means and a calculator for calculating the number of revolutions of the motor and said supply rollers from the count in said counter, said processing means placing said document feeder in the automatic mode upon receipt of said first and second discriminating signals, in said automatic mode said processing means operating said display in response to the presence or absence of said first detector signal, said processing means causing said clutch means to drivingly connect said supply rollers to the motor to rotate said supply rollers a predetermined number of times as calculated by said calculating means upon receipt by said receiving means of said signal from said first detector and the absence of a signal from said warm-up signal providing means, and when the supplied document contacts the belt feed section said controller causes said clutch means to drivingly connect the belt feed section to the motor to position the document on said platen, said controller causing the belt feed section to halt the transport of the document so that the copying machine can copy the document, said controller then causing said belt feed section to resume transport of the document and causing said clutch means to drivingly connect said discharge rollers to the motor, said counter counting the number of pulses received in the time from transport of the document by the belt feed section from the platen to detection of the document by said second detector, said second detector then providing said second signal, said calculator determining the transit time of the document from said pulses counted by said counter, said controller causing said clutch means to drivingly connect the motor and said discharge rollers to discharge the document upon said transit time being less than a predetermined time, said controller preventing said clutch means from connecting said discharge rollers and the motor and causing an output signal to be displayed at said display whenever said transit time is greater than the predetermined time.

4,620,783

COLOR IMAGE FORMING APPARATUS

Kiyoharu Tanaka; Kenji Yoshinaga; Kenji Takeda; Shinichi Oguri, all of Yokohama; Yusaku Takada, and Akio Ohno, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 3, 1985, Ser. No. 740,493

Claims priority, application Japan, Jun. 8, 1984, 59-117656

Int. Cl.[4] G03G *15/06*

U.S. Cl. 355—14 D **8 Claims**

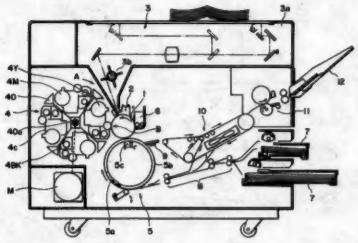
1. A color image forming apparatus wherein a plurality of developing units are used to develop a latent image formed on

an image bearing member corresponding to a color component to provide a color comprising image:

a plurality of developing units each containing a selected color of developer;

means for supporting the plurality of the developing units;

driving means for revolving the developing units to place a selected one of the developing units at a predetermined developing position;



means for detecting the developer contained in said developing units; and

control means for controlling said driving means to move one of the developing units to a predetermined position for developer supply when said detecting means detects the necessity of supplying the developer to said one of the developing units.

4,620,784

PLANETARY CAMERA

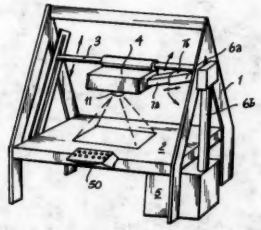
Martin R. P. Seib, Wembley Park, United Kingdom, assignor to Imtec Management Information Technology Limited, Middlesex, United Kingdom

Filed Mar. 26, 1984, Ser. No. 593,639

Claims priority, application United Kingdom, Apr. 21, 1983, 8310875; Jul. 5, 1983, 8318154

Int. Cl.[4] G03B *32/00, 17/50*

U.S. Cl. 355—27 **9 Claims**



1. A planetary system including

a frame on which an object of which a permanent image is required can be placed,

a camera head movably mounted on the frame for exposing a light-sensitive film member to a light image of the object,

a film-processing station of the system in which exposed light-sensitive film of the member is processed to produce the required permanent image,

the film processing station being mounted on the frame remote from the camera head, and

a light-tight transporting means for an exposed film member interconnecting the station and the head, said transporting means comprising a telescopic tubular member containing a pair of opposed endless conveyors between confronting flights of which the film member moves for transporting the exposed film member, at least the confronting flight of each conveyor in the telescopic tubular member including a loop whose size varies as the tubular member telescopes.

4,620,785

SHEET-LIKE MEMBER HAVING ALIGNMENT MARKS AND AN ALIGNMENT APPARATUS FOR THE SAME

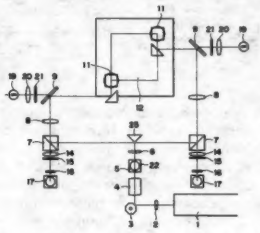
Akiyoshi Suzuki; Hiroshi Sato, both of Tokyo, and Ichiro Ishiyama, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

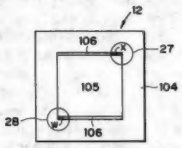
Filed Nov. 21, 1983, Ser. No. 553,814

Claims priority, application Japan, Dec. 1, 1982, 57-210913; Nov. 19, 1983, 58-217111

Int. Cl.[4] G03B *27/42*

U.S. Cl. 355—53 **4 Claims**





1. An apparatus for aligning a pattern of a first object sequentially with plural pattern areas of a second object arranged along first and second directions with non-pattern mark regions between adjacent pattern areas, and having mark elements associated with each of said pattern areas provided in first mark areas and second mark areas of said non-pattern mark regions interposing respective pattern areas, said apparatus comprising:

projecting means for projecting the pattern of said first object onto said pattern areas of said second object;

means for producing a detection beam;

first detecting means, having a first detection area, for detecting through said projecting means said first mark area for one of said plurality of pattern areas which is disposed within a projection area of said projecting means, using said detection beam;

second detecting means, having a second detection area which is staggered in both of said first and second directions with said first detection area, for detecting through said projecting means said second mark area for said one of said plurality of pattern areas which is disposed within said projection area of said projecting means, using said detection beam; and

means, responsive to said first and second detecting means, for aligning said first object with said pattern area of said second object which is disposed within said projection area of said projecting means.

4,620,786

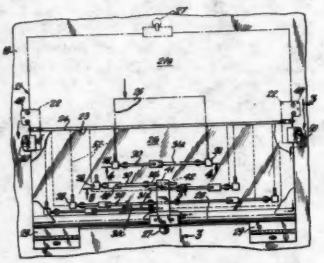
CAMERA PLATEN FILM POSITIONING APPARATUS

Bruce Hurd, Ridgefield, Conn., and Quentin Vauhn, Hollywood, Fla., assignors to Visual Graphics Corp., Tamarac, Fla.

Filed Oct. 25, 1985, Ser. No. 791,458

Int. Cl.[4] G03B *27/58*

U.S. Cl. 355—72 **8 Claims**



1. A film positioning and retaining apparatus for a camera having an enclosed light-tight film exposure chamber a table-like support defining the bottom of said chamber comprising a transparent film receiving plate carried in the focal plane of said chamber within a window in said chamber bottom, a platen overlying the transparent plate, said platen having abutting front and rear pieces of substantially equal size and shape, first hinges swingably securing said pieces together at their abutting edges, second hinge means to swingably secure the rear platen piece to the table, a plurality of spaced elongated film positioning and orienting stops carried by the rear platen piece, a plurality of elongated slots in the rear platen piece to each receive one of said stops therethrough, an elongated flat bar shaped portion on each of said stops, spring means carried by the bar shaped portions to yieldably support the said bars within the slots and above the transparent plate, a plurality of "L" shaped swingable control arms at least one of which is secured to the top portion of each of said flat bars, bifurcated portions at each end of said control arms to receive at least a portion of the flat bar therebetween, said control arms being swingable from a first position beneath the front platen piece when said front platen piece is swung into a position overlying the rear platen piece to a second position in which the said control arm is disposed in the path of the front platen piece as it is swung rearwardly to overlie the rear platen piece, whereby a selected control arm is pushed down to compress the spring means to bring the flat bar into contact with the transparent plate to stop, locate, and position unexposed film being slid across the plate and beneath the platen prior to exposure.

4,620,787

STENCIL SCREEN EXPOSURE APPARATUS

James A. Black, Kent City, and Gregory J. Munson, N. Muskegon, both of Mich., assignors to General Research, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 666,966, Oct. 31, 1984, Pat. No. 4,575,234. This application May 28, 1985, Ser. No. 738,345

Int. Cl.[4] G03B *27/62, 27/64*

U.S. Cl. 355—76 **19 Claims**

1. Stencil exposure apparatus, comprising: a vertical support frame having a translucent surface for supporting a stencil pattern thereon, said support frame having a front surface and a rear surface;

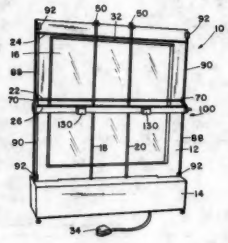
seal means for providing a periphery seal about the space on said translucent surface to which the stencil pattern is mounted;

suction means for applying a suction between said translucent surface and a stencil screen positioned adjacent thereto;

a support bar movably mounted on said rear surface of said frame, said support bar being movable across substantially all of said translucent surface;

means for maintaining the orientation of said support bar relative to said frame; and

a mounting bar connected to said support bar and extending across said front surface of said frame, said mounting bar



having means for mounting and supporting a stencil screen chase thereon and for positioning the stencil screen adjacent said translucent surface, whereby the position of said mounting bar is varied by varying the position of said support bar to accommodate the mounting of stencil screens of various sizes.

4,620,788

APPARATUS FOR MEASURING PULSE SIGNAL DELAY INTERVAL

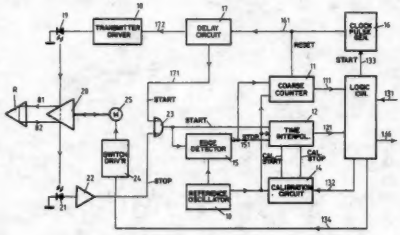
Kurt Giger, Heerbrugg, Switzerland, assignor to Wild Heerbrugg, AG, Heerbrugg, Switzerland

Filed Jul. 1, 1983, Ser. No. 510,223

Claims priority, application Switzerland, Jul. 13, 1982, 4269/82

Int. Cl.[4] G01C *3/08;* G01S *13/10;* H03K *5/00*

U.S. Cl. 356—5 **23 Claims**



1. Apparatus for measuring the length of a path by measuring the time required for pulses to propagate along said path, the combination comprising:

a transmitter and a receiver defining the ends of said path;

means for producing a start signal;

means to transmit said start signal to said transmitter to cause said transmitter to generate pulses which propagate along said path;

means responsive to receipt of one of said pulses at said receiver to generate a stop signal;

oscillator means for producing a train of reference pulses at a predetermined frequency;

coarse counter means for counting the pulses received at said receiver between said start and stop signals;

fine measurement interpolator means;

and means to cause said fine measurement interpolator means to determine two residual times, one between said stop signal and a predetermined edge of the next following

reference pulse, and a second residual time betwen said start signal and a predetermined edge of the next following reference pulse.

4,620,789

ENDFACE ASSESSMENT

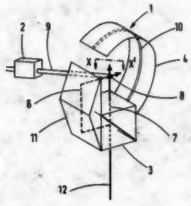
Colin A. Millar, Felixstowe, England, assignor to British Telecommunications plc, United Kingdom

Filed May 29, 1985, Ser. No. 738,711

Claims priority, application United Kingdom, May 30, 1984, 8413781

Int. Cl.[4] G01N *21/84;* G01B *11/26*

U.S. Cl. 356—73.1 11 Claims



1. Apparatus for use in assessing endfaces of dielectric members, comprising means for mounting a dielectric member such that its end portion is exposed, means for directing collimated light from a plurality of directions onto the inner surface of the endface of the member, each such direction being fixed relative to the endface, such as to generate a diffraction pattern which subtends an angle of not less than 180° at the endface, and means to detect at least part of a diffraction pattern so generated.

4,620,790

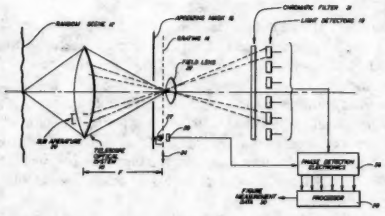
SYSTEM FOR DETERMINING OPTICAL ABERRATIONS OF A TELESCOPE OPTICAL SYSTEM

Robert E. Hufnagel, Ridgefield, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Apr. 13, 1984, Ser. No. 599,909

Int. Cl.[4] G01B *9/06*

U.S. Cl. 356—124 9 Claims



1. A system for determining optical aberrations in a telescope optical system comprising:

said telescope optical system being arranged for imaging a scene;

grating means disposed at a focal plane of said telescope optical system;

an apodizing mask having transparent and opaque portions disposed adjacent said grating means wherein there is a gradual gradient transition between said transparent and said opaque portions;

an array of light detectors, each of said light detectors being positioned to receive the image of a subaperture portion of said telescope optical system;

field lens means disposed adjacent said grating for causing said subaperture portions of the telescope optical system to be imaged on said array of light detectors, respectively;

means for effecting relative movement between said grating means and said telescope optical system;

means responsive to said light detectors for determining the difference in phase between the individual detector signals and a reference phase;

whereby a measure of the aberration at each subaperture portion of said telescope optical system is effected.

4,620,791

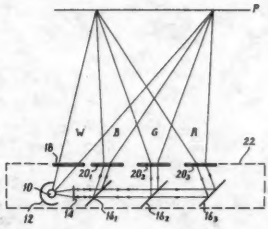
LIGHT PROCESSOR

Michel P. Combastet, 25 rue du fg Saint-Honoré , Paris, France (75008)

Filed Jul. 3, 1984, Ser. No. 627,733

Int. Cl.[4] G01J *3/46, 3/26*

U.S. Cl. 356—420 4 Claims



1. A light processing apparatus comprising:

a longitudinal modular box having a base and a planar wall spaced from and parallel to said base, said planar wall defining an outer surface of said box, and said planar wall having therein a plurality of windows;

a white light source mounted on said base within said box;

a plurality of dichroic mirror means, mounted on said base within said box along a longitudinal path of a light beam from said source and inclined to said path, for reflecting partial beams of respective portions of the light spectrum and transmitting along said path to sucessive said mirror means respective remaining portions of the light spectrum;

a plurality of liquid crystal cell means, mounted in respective said windows of said planar wall, for modulating respective said partial beams toward a position spaced from said box;

an additional similar liquid crystal cell means, mounted in a respective said window of said planar wall, for modulating a beam of the white light from said source to said position;

all of said liquid crystal cell means extending in the same plane; and

means on said box for the superposition or juxtaposition mounting of other boxes of light processing apparatus.

4,620,792

METHOD OF SIMPLY SETTING EXPANSION REGIONS FOR CONVERSION OF VALUES OF COLORS ACCORDING TO XYZ NOTATION SYSTEM INTO VALUES OF COLORS ACCORDING TO MUNSELL NOTATION SYSTEM

Nagaichi Suga, 3-8, Toyama, 1-chome, Shinjuku-ku, Tokyo, Japan

Filed Apr. 6, 1984, Ser. No. 597,822

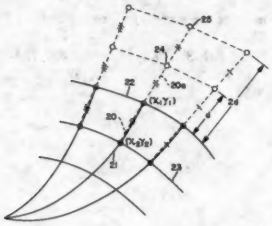
Int. Cl.[4] G01T *3/52*

U.S. Cl. 356—402 1 Claim

1. A method of expanding the regions in which conversion

of color values in the CIE notation system to values in the Munsell notation system can be made, comprising the steps of:

on a conventional Munsell chromaticity diagram having equi-hue lines and equi-chroma loci and superimposed on a CIE set of coordinates in a conventional conversion diagram, extending the respective equi-hue lines outwardly from the outermost equichroma locus in a direction in alignment with respective lines connecting the respective intersections of the outermost equichroma locus with the respective equi-hue lines and the intersections of the next inward equi-chroma locus with the respective equi-hue lines, the extension being to points along the extended equi-hue lines which are integral multiples of a value d which is equal to $\sqrt{(x_1-x_2)^2+(y_1-y_2)}$ where x_1 and y_1 are the CIE notation values of the points of intersection of the respective equi-hue lines and the outermost equi-chroma locus, and x_2 and y_2 are the CIE notation values of the points of intersection of the respective equi-hue lines and the next inward equi-chroma locus; and



joining the points along the extended equi-hue lines with corresponding points on adjacent equi-hue lines to form further equi-chroma loci outwardly of the said outermost equichroma locus.

4,620,793

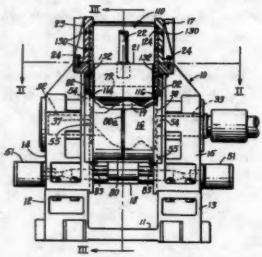
MIXER DEVICE

Wilson A. Bell, Southbury, Conn., assignor to USM Corporation, Farmington, Conn.

Filed Mar. 18, 1985, Ser. No. 712,871

Int. Cl.[4] B01F *7/02*; B29B *1/08*

U.S. Cl. 366—76 **5 Claims**



1. A mixing device for mixing material into a plastic state having spaced apart end frame members, and sidewall means internally defining a mixing chamber in the form of adjacent cylinders with mixing rotors supported by said end frame members extending through the mixing chambers; comprising a pair of side assemblies, each of said side assemblies having wall means defining a portion of the surface of a cylinder and including flange members at opposite ends thereof, said flange members having upper and lower substantially parallel edge surfaces, a horizontally directed recess defined in each end frame arranged to receive the edge surfaces of said flange members therein so that said side assemblies may be slid horizontally onto and out of said end frames, said side assemblies defining a bottom doorway for discharge of material from said chamber and an upper opening for introduction of material into said chamber, wall structure forming a removable feed hopper joined to said end frames providing a passage to said upper opening, and a movable weight extending through said hopper and into said upper opening to force the material through the hopper and into said mixing chamber, the improvement comprising wall structure defining a sleeve disposed within said hopper and extending through said upper opening into said mixing chamber, said sleeve member being affixed to said interior of said hopper wall structure and said side wall and end frame to both inhibit relative motion between said feed hopper and said mixing chamber and to provide a wear surface disposed to be contacted by said weight during the mixing operation.

4,620,794

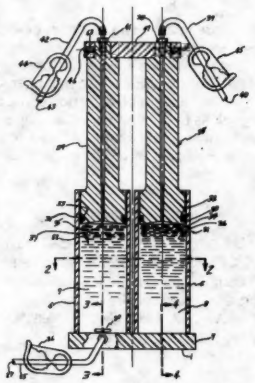
GRADIENT FORMERS

George T. Leka, Trumbull, Conn., assignor to Jule Inc., Trumbull, Conn.

Filed Nov. 20, 1984, Ser. No. 673,278

Int. Cl.[4] B01F *7/16, 13/08, 15/02*

U.S. Cl. 366—131 **8 Claims**



1. A linear gradient former constructed for manually dispensing small volumed linear gradients and manually refilling the gradient former simultaneously from separate reservoirs comprising

A. a first, elongated fluid storing container incorporating outlet means connected substantially at the base thereof;

B. a second elongated fluid mixing chamber incorporating inlet means and outlet means at the base thereof, with said inlet means interconnected with the outlet means of the first container;

C. a first pair of fluid flow control means mounted along the outlet means of the storage chamber and the outlet means of the mixing chamber;

D. a first piston member sealingly engaged with the first, elongated fluid storing container and incorporating

a. a first, container engaging portion,

b. a first, elongated rod portion extending from the first container-engaging portion and comprising a length at least equal to the length of said container, providing a readily accessible, easily controlled member for use by the operator to manually move the container engaging portion along the entire length of said container,

c. channel means formed in said first elongated rod portion and said first container engaging Portion, providing a first elongated, continuous fluid carrying conduit

extending the entire length of said first piston member, and

d. tube means extending from said first fluid carrying elongated conduit, providing a fluid flow path directly into or out of said first fluid storing container directly through said first piston member;

E. a second piston member sealingly engaged with the second, elongated, fluid mixing chamber and incorporating

a. a second, container engaging portion

b. a second, elongated rod portion extending from the second container-engaging portion and comprising a length at least equal to the length of said container, providing a readily accessible, easily controlled member for use by the operator to manually move the second container engaging portion along the entire length of said container,

c. channel means formed in said second elongated rod portion and said second container engaging portion, providing a second elongated, continuous fluid carrying conduit extending the entire length of said second piston member, and

d. tube means extending from said second fluid carrying conduit, providing a fluid flow path directly into or out of said second fluid mixing chamber directly through said second piston member;

F. a second pair of fluid flow control means mounted along the tube means of said first and second piston members for controlling the flow of fluid through said piston members, thereby providing means for venting or controlling air pockets above liquids in said chambers prior to gradient formations, as well as providing means for filling said chambrrs with desired liquids simultaneously from separate reservoirs;

G. handle means removably mounted to the elongated rod portions of said first and second piston members and extending therebetween, providing a readily accessible handle for use by the operator in simultaneously manually moving both piston members the entire length of said containers with precision and accuracy; whereby the rate of fluid flow from the first, fluid storing container into the second fluid-mixing container and the rate of fluid flow out of the fluid-mixing container are precisely controlled, directly by the operator, throughout the entire dispensing of the gradient, assuring that fluid levels drop at the same rate in each chamber, while also providing controlled, manual refilling of both chambers simultaneously, from separate reservoirs, by manually moving said piston members in the opposite direction and allowing fluid to flow simultaneously into the chambers from separate reservoirs through said tube means and fluid conduits formed in said piston members.

4,620,795

FLUIDIZING DEVICE FOR SOLID PARTICULATES

James P. Diebold, Lakewood, and John W. Scahill, Golden, both of Colo., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation-in-part of Ser. No. 457,339, Jan. 12, 1983, abandoned. This application Jun. 27, 1984, Ser. No. 625,327

Int. Cl.[4] **B01F** *11/00*; **B65G** *1/00*; **G01F** *11/00*

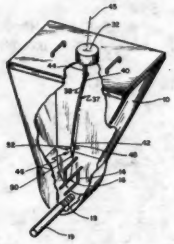
U.S. Cl. 366—241 **13 Claims**

1. An apparatus for facilitating a flow of solid particulates through an orifice of a hopper comprising:

(a) a flexible whip including two transversely spaced elongated members, said two elongated members being connected to one another at opposed ends thereof;

(b) means for mounting said whip in a generally vertical orientation within said hopper such that one end of said whip is freely suspended above said orifice;

(c) means for causing said whip to rotate about a substantially vertical axis defined by said hopper such that each one of said two elongated members are caused to independently impact and fluidize said solid particulates within said hopper, and wherein an anchor is affixed to the freely suspended end of said whip, and wherein said anchor comprises:



(i) a rigid longitudinal member having a first and a second end, said first end being connected to said freely suspended end of said whip; and

(ii) a spiral member which is supportedly connected to said second end of said longitudinal member.

4,620,796

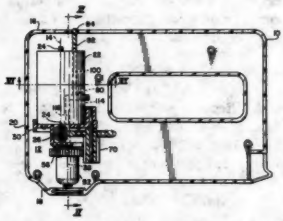
ELECTRIC MIXER WITH BEATER EJECT MECHANISM

Gregory E. Moores, Reistertown, Md., assignor to Black & Decker, Inc., Newark, Del.

Filed Jan. 9, 1985, Ser. No. 689,931

Int. Cl.[4] **B01F** *13/00*

U.S. Cl. 366—344 **10 Claims**



1. An electric mixer for rotating a pair of cooperating beaters having shafts at one end thereof, the mixer comprising:

(a) a housing defining a cavity having an axis extending between first and second ends thereof;

(b) gear means disposed in said cavity proximate the second end thereof for releasably engaging the ends of the beater shafts and for rotating said beaters about rotation axes parallel to each other and to said cavity axis;

(c) motor means coaxially disposed in said cavity proximate the first end thereof for driving said gear means;

(d) gear case means secured to said motor means for rotatably supporting said gear means; and

(e) a beater ejector disposed in said cavity for slidable, axial movement, said ejector having a first end projecting through an opening in said housing at the first end of said cavity for manual actuation and a second end including two spaced, parallel rods, each said rod being coaxial with the rotation axis of a respective one of said beaters and being guidably received in an opening in said gear case means for axially engaging the shaft end of said respective beater releasably engaged in said gear means.

4,620,797
ELECTRONIC TIME PIECE COMPRISING A DEVICE FOR ADJUSTING THE TIME DISPLAY

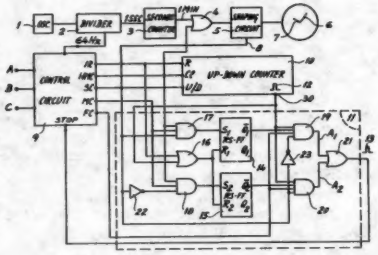
René Besson, Neuchâtel, and Pierre-André Meister, Bienne, both of Switzerland, assignors to ETA SA Fabriques d'Ebauches, Granges, Switzerland

Filed Sep. 4, 1985, Ser. No. 772,572

Claims priority, application Switzerland, Sep. 5, 1984, 04251/84

Int. Cl.[4] G04B *19/22, 19/04*

U.S. Cl. 368—21 5 Claims



1. An electronic time piece comprising at least an hour indicator, a minute indicator, a manually actuable correction device which, when actuated, effects step-by-step correction in either direction of said minute indicator in response to a first given operation carried out on said device and rapid correction in either direction of said minute indicator by whole time zones in response to a second given operation, different from the first, carried out on said device, and compensating means operative to cancel, when said correction device is actuated, any correction of said minute indicator which may precede a time zone correction, whereby said second operation always effects a correction of a whole time zone in relation to the real time at the moment said correction device is actuated.

4,620,798
WATCH CASE

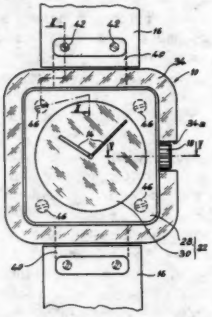
Renato Scarinzi, Bienne, Switzerland, assignor to Montres RADO SA, Lengnau b/Biel, Switzerland

Filed Dec. 5, 1984, Ser. No. 678,432

Claims priority, application Switzerland, Jan. 26, 1984, 361/84

Int. Cl.[4] G04B *37/00*

U.S. Cl. 368—276 18 Claims



1. A watch case comprising a middle, a back plate, a front plate having at least a transparent, glass-acting, portion, and assembling means for assembling the middle, the back plate and the front plate, said middle including inner and outer concentric rings having opposing annular faces, said inner ring and at least a portion of said outer ring being sandwiched between said front plate and said back plate, said inner ring being adapted to provide support for a watch movement, said outer ring serving to protect the watch and to contribute to its aesthetic appearance, and said assembling means comprising screw means and nut means located radially inward from said opposing annular faces, said nut means pressing against the other of said plates and engaging said nut means within said inner ring such that said outer ring is held in place by being pressed between said front plate and said back plate.

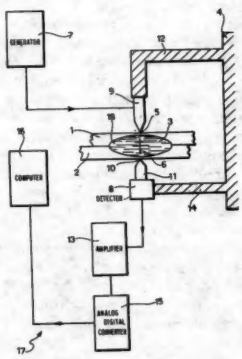
4,620,799
NON-DESTRUCTIVE QUALITY-TESTING OF A JOINT BETWEEN SHEETS MADE BY ELECTRIC SPOT WELDING

Mario Palazzetti, Avigliana; Stefano Re Fiorentin, Grugliasco, and Giovanni Tufano, Rivoli, all of Italy, assignors to Fiat Auto S.p.A., Italy

Filed May 24, 1985, Ser. No. 737,644

Int. Cl.[4] G01N *25/72*

U.S. Cl. 374—5 7 Claims



1. Device for the non-destructive testing of a joint between two metallic sheets of substantially the same material spot-welded together in a local zone with the formation of a weld core, the structure of said core having a substantially different thermal diffusivity from that of the initial material, said device comprising:

a heat source means including a heat conveying path means for supplying heat to a first point on the surface of one of the sheets adjacent said core;

an electrode adapted to form a thermocouple with the sheets at a second point on the surface of the sheets spaced from said first point to provide thermal signals;

a detector connected to the electrode to receive thermal signals form the latter;

an amplifier connected to the detector;

an analog digital converter connected to the amplifier output; and

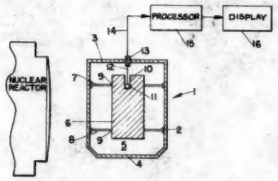
a computer connected to the analog digital converter for processing the digital signal to determine the thickness of the weld core and the quality of the joint between the two sheets welded together.

4,620,800

HIGH LEVEL GAMMA RADIATION DOSIMETER

James N. Anno, Cincinnati, Ohio, assignor to Research Dynamics Incorporated, Cincinnati, Ohio

Filed Mar. 8, 1984, Ser. No. 587,562
Int. Cl.[4] G01K *17/00;* G01T *1/29*
U.S. Cl. 374—132 28 Claims



1. A direct dosimeter for the absolute measurement of high level gamma radiation flux in excess of about 0.1 megarad/hr in a gamma radiation field comprising:

a portable housing having an interior space evacuated to a partial pressure at least;

a body of heat conducting material having a substantially constant specific heat positioned within said space in non-heat conducting relationship with said housing with spaced thermal insulating means mounting said body to said housing wherein the temperature of said body when heated by gamma radiation in said gamma radiation field is substantially constant and the rate of heat loss of the body is substantially proportional to the temperature of the body and the temperature of said space, said space being evacuated to a sufficiently low pressure so that heat transfer from the plate by convection is substantially negligible compared to heat transfer from the plate by conduction and radiation; and

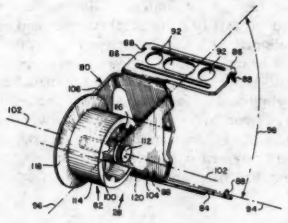
radiation resistant thermocouple means attached to said body for measuring and for processing the time rate of temperature change of the body.

4,620,801

UNIVERSAL SINGLE ROLLER BRACKET

Paul M. MacDonald, Scituate, Mass., assignor to P.X. Industries, Inc., West Hanover, Mass.

Filed Sep. 19, 1985, Ser. No. 777,917
Int. Cl.[4] F16C *29/04;* A47B *88/00*
U.S. Cl. 384—19 10 Claims



1. A universal single roller bracket for use in the corners of a cabinet opening for a drawer comprising:

(a) a unitary bracket;

(b) a pair of flat mounting flanges formed integrally with said bracket;

(c) said pair of flat mounting flanges formed in respective planes converging at an acute angle toward an apex and defining an axis near said apex;

(d) a pair of spaced parallel roller supports formed integrally with said bracket and in planes normal to said axis, at least one of said pair of spaced parallel roller supports being bounded by said respective planes converting at said acute angle toward said apex; and

(e) a roller supported with said supports for rotation about said axis, said roller formed of a plastic material.

4,620,802

GUIDE FOR ROTATING SUCKER RODS

Robert D. Harrel, Tulsa, Okla., assignor to Tellin, Incorporated, Tulsa, Okla.

Filed Aug. 9, 1985, Ser. No. 764,135
Int. Cl.[4] F16C *29/04;* E21B *17/10*
U.S. Cl. 384—53 4 Claims

1. An improved guide for use in a string of sucker rods rotated in a tubing string in a borehole, the sucker rods having threaded male ends, the guide comprising:

an elongated upright solid cylindrical coupling body of external diameter less than the internal diameter of tubing in which it is to be used, the coupling body having sucker rod receiving female threaded openings at the upper and lower ends, the threaded openings being coaxial of the body cylindrical axis whereby the body may be positioned in a string of sucker rods, and including a plurality of at least three recesses in the body cylindrical surface, the recesses being oriented relative to each other so that there is a recess in at least each 120° quadrant around the body, each recess being elongated and having opposed planar walls each in a plane parallel the coupling body cylindrical axis and the planes intersecting to form a notch of V-shaped configuration in planes prependicular the coupling body cylindrical axis;

a pair of spaced apart axle holders positioned in each said recess, each pair of holders having aligned axle receiving recesses therein, each holder being defined in part by two planar intersecting surfaces, the planar surfaces of each holder being matingly received by said planar walls of the said recess receiving the holder, and being further defined by a semicircular surface of radius equal said cylindrical coupling body whereby each holder completes the external circumferential surface of the cylindrical coupling body in planes perpendicular the coupling body cylindrical axis passing through each holder;

an axle received in each said recess in said coupling body, the axis of each axle being parallel and spaced from the body longitudinal axis;

a roller rotatably received on each axle, the periphery of each roller extending exteriorly of the external cylindrical surface of said coupling body a distance measured from the coupling body cylindrical axis to a point on each roller cylindrical surface most distant from the body axis being less than the radius of the internal cylindrical surface of

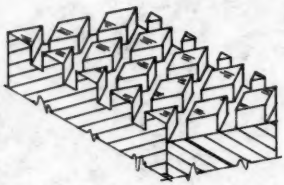
the tubing in which the guide is dimensioned to operate, and wherein each said roller has an external surface which is defined relative to the roller rotational axis by a central portion and a frustoconical portion on each end whereby the diameter of the roller adjacent the ends is reduced; and means to retain each of said holders in said coupling body recess.

4,620,803

FRICTION BEARING COUPLE

Edward Vezirian, 110 Firwood, Irvine, Calif. 92714

Filed Jul. 26, 1985, Ser. No. 759,238
Int. Cl.[4] F16C *17/10*
U.S. Cl. 384—93 2 Claims



1. In a rotary cone rock bit, a heavy duty friction bearing couple comprising:

a first structural member forming thereon a first load bearing surface,

a second structural member forming thereon a second load bearing surface adapted for mutual cooperation with said first load bearing surface to support relative motion therebetween, and

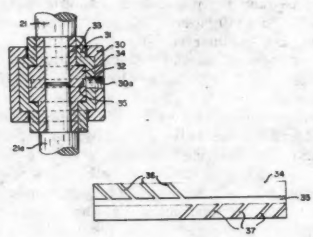
a fine grid of lubricant grooves formed by one of said load bearing surfaces thereon, said lubricant grooves being from about 0.005 inch to about 0.010 inch in depth, and said lubricant grooves being from about 0.008 inch to about 0.028 inch in width as measured in the direction of relative motion of said load bearing surfaces.

4,620,804

BEARING AND GREASE SEAL STRUCTURE

Thomas S. Goyne, Box No. 75, Helfenstein, Pa. 17939

Filed May 15, 1985, Ser. No. 734,053
Int. Cl.[4] F16C *17/10*
U.S. Cl. 384—275 16 Claims



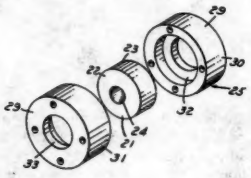
1. A bearing and seal structure for submerged operation comprising a housing surrounding a shaft, a rotatable sleeve connector removably fixed on said shaft and rotating therewith in said housing, a stationary sleeve fixed in said housing surrounding and in bearing contact with said rotatable sleeve, passage means in said housing and stationary sleeve carrying lubricant to the interior of the stationary sleeve in contact with the rotatable sleeve and a continuous pressure lubricant source supplying continuous lubrication to said passage means and between the rotatable and stationary sleeves and wherein the rotatable sleeve connector connects two coaxial shaft ends.

4,620,805

PLASTIC BEARING AND HOUSING ASSEMBLY

James A. Belanger, Northville, Mich., assignor to Belanger, Inc., Northville, Mich.

Continuation of Ser. No. 612,306, May 21, 1984. This application Dec. 23, 1985, Ser. No. 812,415
Int. Cl.[4] F16C *23/02, 33/22, 35/02*
U.S. Cl. 384—297 2 Claims



1. A bearing comprising:

a block of plastic material having first and second sides and a substantially centrally located bearing bore extending from the first side through the second side;

a housing having first and second parts, said first part including a metal cylindrical annulus having first and second axially aligned cylindrical inner surfaces, said first inner cylindrical surface extending from a first end of the first part to a intermediate point in said first part, said second cylindrical surface extending from a second side of the first part to said intermediate point in said first part and having in a diameter greater than the diameter of the first cylindrical surface, said first part having a plurality of fastener bores spaced from said first and second cylindrical surfaces and said fastener bores being circumferentially spaced about said first part, said second part having first and second axially aligned cylindrical surfaces, said first cylindrical surface extending from a first side of the second part to an intermediate point in said second part, and said second cylindrical surface extending from a second side of said second part to said intermediate point in said second part, said second cylindrical surface having a diameter greater than said first cylindrical surface and being the same diameter as said second cylindrical surface of said first part, said second part having a plurality of fastener bores spaced from said first and second cylindrical surfaces and circumferentially spaced about said first and second axially cylindrical surfaces and being adapted to be aligned with said fastener bores of said first part; and

said block being generally cylindrical in shape and having an outer diameter slightly less than the diameter of said second cylindrical surfaces of said first and second parts and being adapted to be received therein when said first and second parts are secured together, whereby said block is securely retained within said first and second parts such that no fasteners are required to extend through said block.

4,620,806

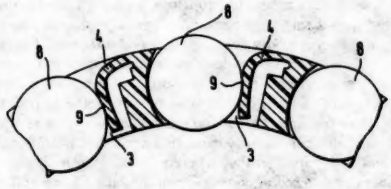
CAGE

Jürgen Rabe, Aurachtal, Fed. Rep. of Germany, assignor to INA Wälzlager Schaeffler KG, Herzogenaurach, Fed. Rep. of Germany

Filed Jul. 15, 1985, Ser. No. 755,296
Claims priority, application Fed. Rep. of Germany, Jul. 25, 1984, 3427347
Int. Cl.[4] F16C *33/46, 33/56;* F16D *15/00*
U.S. Cl. 384—572 6 Claims

1. A cage for an overrunning roller clutch, the cage being

made of polymeric material and having two end rings connected by crossbars for forming a plurality of pockets for cam rollers, the crossbars being provided on their length with integrally molded leaf shaped spring elements acting on the



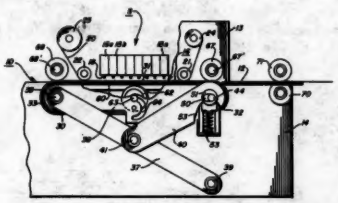
cam rollers, each crossbar having on its outer diameter at least one spring element which in its initial state extends essentially in a plane containing the cage axis and which is bent essentially radially inwardly when the cam roller is inserted in the respective pocket.

4,620,807

ARTICLE TRANSPORT FOR PRINTERS

Neil A. Polit, Crystal Lake, Ill., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 23, 1985, Ser. No. 779,327
Int. Cl.[4] B41J *11/20*
U.S. Cl. 400—56 **2 Claims**



1. An article transport for bringing articles to be addressed into operative relation with the print head of a printer which accommodates changes in article thickness while remaining level comprising, in combination:

(a) a first pair of links forming opposite sides of said transport;

(b) drive and idler shafts journaled between said links adjacent each end of said links, said drive and idler shafts each supporting at least one roller;

(c) an endless article transport belt stretched about said rollers;

(d) a second link rotatably journaled with each of said first links adjacent one end through one of said drive and idler shafts, said second links extending downwardly with the opposite end pivotally attached to said printer whereby to form a first pivotal support for said transport in said printer;

(e) a third link attached by one end with each one of said second links, the opposite ends of said third links being enlarged and receiving the other of said drive and idler shafts therethrough whereby said third links are pivotally attached to the opposite end of said first links;

(f) slide blocks supporting the opposite ends of said third links on said printer for vertical up and down movement whereby to form a vertically displaceable second support for said transport in said printer; and

(g) spring means biasing said slide blocks and the opposite ends of said third links upwardly to cause said belt in cooperation with an adjoining roll to form a resilient nip through which said articles pass;

whereby on entry of an article having a different thickness into said nip, the nip changes size while said first, second, and third links cooperate to change the height of said transport in response to the change in nip size while maintaining said transport level.

4,620,808

DISPLAY TYPEWRITER

Stephen Kurtin, Sherman Oaks; Dan L. McGurk, Hidden Hills; Daniel E. Fedele, Simi Valley, and Edward C. Kelm, Pasadena, all of Calif., assignors to Protype Corporation, Sun Valley, Calif.

Filed Apr. 9, 1984, Ser. No. 597,922
Int. Cl.[4] B41J *3/46*
U.S. Cl. 400—83 **4 Claims**

1. In a text preparation system which includes a keyboard, electronic processing circuitry, a printer, and video display means, the improvement which comprises:

an enclosure for containing said electronic processing circuitry, said enclosure having a sloping top for holding said printer whereby an operator may view the printing function of said printer while seated in position to operate said keyboard, said enclosure having a keyboard support for supporting said keyboard at a predetermined height; and means for movably supporting said video display means whereby said video display may be positioned at a convenient location and angle with respect to the operator comprising a vertical post mountable at any one of a plurality of positions adjacent said enclosure; an arm rotatably mounted to the top of said post; means for mounting said video display at the free end of said arm; means limiting the rotation of said video display in a horizontal plane; and means for rendering the limits of said rotation of said video display relative to said arm dependent on the position of said arm, said means for rendering the limits of rotation of said video display dependent on the position of said arm comprising a train of gears coupling said post to said rotation limiting means.

4,620,809

DUAL SHEET FEEDER FOR TYPEWRITERS OR OUTPUT PRINTERS

Kurt Rünzi, Küsnachterstr. 59, CH 8126 Zumikon, Switzerland

Filed Mar. 26, 1985, Ser. No. 716,196
Claims priority, application Switzerland, Apr. 2, 1984, 1665/84
Int. Cl.[4] B41J *11/58*
U.S. Cl. 400—624 **15 Claims**

1. For combination with an office writing machine **(19)** having a platen **(10)** rotatable in a forward sheet feeding direction **(A)** and in a reverse sheet aligning direction **(B)**,

apparatus for feeding single copy elements from a stack **(2, 3)** of sheets having

separating rollers **(7, 8)** in engagement with a topmost sheet of the stack of sheets;

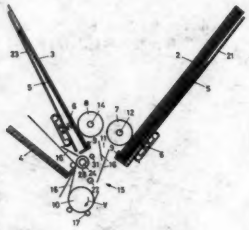
drive means **(42, 46; 44, 48)** including gearing and an overrunning clutch **(13)** coupled to the separating rollers for driving the separating rollers to feed the topmost sheet to the platen,

the overrunning clutch permitting grasping of the sheet by the platen and pulling the sheet while the separating rollers spin freely,

and a slip-free coupling element (20) coupled to the platen (10) and rotatable therewith in either direction, and further coupled to the drive means to rotate the gearing of the drive means upon rotation of the platen,

wherein, in accordance with the invention,

the gearing includes



means (46, 84) for engaging the coupling element (20) with the separating rollers (7, 8) upon rotation of the platen (10) over a predetermined first angle in the reverse direction;

means (42) for driving the separating rollers (7, 8) after engagement of the coupling element (20) with the separating rollers (7, 8) upon subsequent rotation of the platen (10) over a predetermined second angle in the forward direction; and

means (55) for disengaging the coupling element (20) from the separating rollers (7, 8) after rotation of the platen (10) in the forward direction over the second angle.

4,620,810

SOUND PROOF DEVICE OF A PRINTER

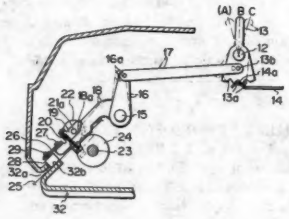
Susumu Hanyu; Hideaki Takenoya, both of Tokyo, and Kazuyuki Saiki, Chofu, all of Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed Sep. 4, 1984, Ser. No. 647,131

Claims priority, application Japan, Sep. 7, 1983, 58-163289

Int. Cl.⁴ B41J *29/08*

U.S. Cl. 400—689 **5 Claims**



1. A sound proof device of a printer having a platen, a printing head with printing wires selectively operated to impact the platen through a printing paper extended between the platen and the printing head to thereby print characters on the printing paper, the printing paper being supplied to a printing position from a paper inserting opening formed at a printer housing as the printing paper is transported by a transporting device including friction rollers operated to frictionally feed the printing paper to the printing position, the friction rollers being movable between an operative position in which the friction rollers frictionally clamp the printing paper to feed the latter to the printing position and an inoperative position in which the friction rollers are set apart to be ready to clamp the printing paper, the device comprising a guide provided at said paper inserting opening of said housing for guiding said printing paper toward said friction rollers; sound proof block means operatively connected to said friction rollers and movable in association with said friction rollers between an operative position in which said sound proof block means rests on said guide and closes said paper inserting opening of said printer housing and an inoperative position in which said sound proof block means is spaced from said guide and opens said paper inserting opening of said printer housing; and operating means when operated to a first position moving said friction rollers to said operative position thereof and simultaneously moving said sound proof block means in association with said friction rollers to said operative position thereof, said operating means when operated to a second position moving said friction rollers to said inoperative position thereof and simultaneously moving said sound proof block means in association with said friction rollers to said inoperative position thereof.

4,620,811

MECHANICAL PENCIL

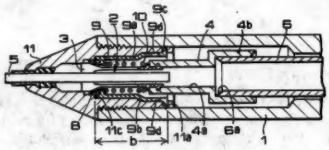
Hidehei Kageyama, Kawagoe, Japan, assignor to Kotobuki & Co., Ltd., Kyoto, Japan

Filed Aug. 14, 1984, Ser. No. 640,999

Claims priority, application Japan, Jan. 26, 1984, 59-9369[U]; Mar. 16, 1984, 59-37663[U]

Int. Cl.⁴ B43K *21/16*

U.S. Cl. 401—65 **1 Claim**



1. A mechanical pencil comprising:

(a) an outer cylinder;

(b) a lead feeding mechanism axially slidably fitted in said outer cylinder;

(c) a lead chuck provided at the front end of said lead feeding mechanism;

(d) a lead guide which includes a rear edge tapered at the inner periphery thereof and which is coupled to said lead chuck of said lead feeding mechanism;

(e) a lead cartridge which includes a front edge tapered at the inner periphery thereof and is detachably fitted into a cartridge receiving bore in said lead guide;

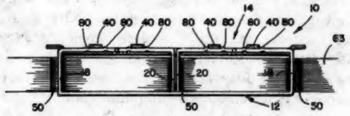
(f) a chuck fastening pipe for fastening said lead chuck;

(g) a tip member connected to the front end of said outer cylinder;

(h) a cushion sleeve disposed in contact with said chuck fastening pipe to regulate the retracting movement of the chuck fastening pipe, said cushion sleeve having integrally formed therewith an elastically deformable cushioning part for regulating writing pressure; and

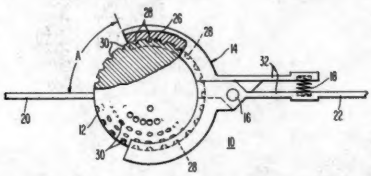
(i) said cushioning part being retained by said tip member which is attached to said outer cylinder and which tip member is provided with a threaded part to facilitate attachment of said tip member to said outer cylinder.

4,620,812
SUPER FASTENER
Nam Kyun Kim, 306 W. Houghton Ave., Houghton, Mich. 49931
Filed Jul. 15, 1985, Ser. No. 755,303
Int. Cl.[4] B42F *13/02, 13/08*
U.S. Cl. 402—68 **5 Claims**



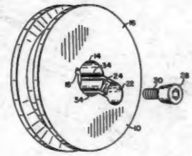
1. A fastener for sheet material, comprising:
a base having a body with two bendable side sheet retainers thereon, and two bendable center sheet retainers formed from material bent up from said body between said side sheet retainers, said sheet retainers each having a lock accommodating zone thereon;
a keeper having two side apertures and a center aperture, said side apertures spaced to receive said side sheet retainers therethrough, and said center aperture located to receive said center sheet retainers therethrough; and
four locks mounted on said keeper to selectively engage said lock accommodating zones when said sheet retainers are bent against said keeper.

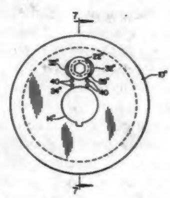
4,620,813
POSITION RETAINING MECHANISM
William A. Lacher, Lansdale, Pa., assignor to Burroughs Corporation, Detroit, Mich.
Filed Oct. 9, 1984, Ser. No. 658,796
Int. Cl.[4] F16C *11/00;* **F16D** *11/06*
U.S. Cl. 403—93 **5 Claims**



1. A mechanism for setting and retaining the position of at least a pair of members comprising:
a sphere, one of said members being coupled thereto,
a pair of jaw-like sections pivotally mounted with respect to each other, said jaw-like sections being disposed in a common plane and having a generally C-shaped configuration, each of said jaw-like sections having a predetermined width which is narrow relative to the length thereof, the other of said pair of members being coupled to said sections, said last mentioned sections including inner surfaces having substantially the same radius of curvature as the surface of said sphere,
said sphere being contained within said jaw-like sections, such that at any given time a portion of the surface area of said sphere is covered by said sections, said predetermined width of said sections providing that the remaining surface area of said sphere not covered by said sections is substantially greater than the covered area, whereby the excursions of said members relative to each other are maximized and approach a full circle in a plane transverse to said common plane, the surface of said sphere and the inner surface of said jaw-like sections being configured in respective contiguous interlocking patterns,
means for opening said jaw-like sections to permit the rotation of said sphere and the corresponding setting of said pair of members to a desired position with respect to each other, said last mentioned means including a pair of extensions affixed respectively to said jaw-like sections, said extensions being spring loaded to bias said sections to a closed position about said sphere, the exertion of a manual force on said extensions in opposition to the spring bias causing said pair of jaw-like sections to pivot to an open position and to remove the spring pressure exerted by said sections on said sphere, the subsequent termination of said manual force and the closing of said jaw-like sections on said sphere providing for the retention of said desired position as effected by said interlocking patterns.

4,620,814
DEVICE WITH DISTORTABLE OPENING-DEFINING PORTION
Jim May, 12110 SE. Pine, Portland, Oreg. 97216
Continuation-in-part of Ser. No. 544,530, Oct. 24, 1983, abandoned. This application May 10, 1984, Ser. No. 608,723
Int. Cl.[4] F16B *2/02;* **F16D** *1/00*
U.S. Cl. 403—314 **3 Claims**





1. A device arranged for connected engagement with an associated member comprising
a body portion having opposite ends and a first bore therethrough arranged to receive an associated member,
a second bore in said body portion extending in from one end in a direction parallel with said first bore but spaced radially therefrom to provide a layer of material between said first and second bores which is integral with said body portion,
a pair of openings in said body member disposed between said first and second bores and extending parallel to said bores,
said pair of openings being spaced laterally from each other to form a tab in said layer of material,
said tab being defined between said pair of openings and between said first and second bores and being capable of distortion toward said first bore in a straight radial direction,
and wedge means in said second bore adjacent said tab arranged when forced in from said one end to distort said tab radially into said first bore and into surface engagement with an associated member in said first bore, said second bore comprises at least one uniform diameter tapped bore and at least one enlarged tapered untapped portion at said one end, said wedge means comprising at least one screw having a uniform diameter threaded shank

portion engageable with said tapped bore and an elongated tapered head portion slidably engageable with said untapped portion of said second bore, whereby inward threaded movement of said screw distorts said tab inwardly for engagement with an associated member.

4,620,815

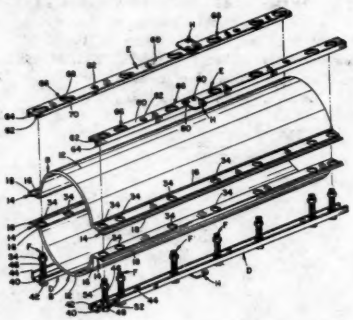
FASTENER STRIPS FOR SPLICE CASES

Erwin H. Goetter, Chesterland, Ohio, assignor to Preformed Line Products Company, Cleveland, Ohio

Division of Ser. No. 591,943, Mar. 21, 1984, Pat. No. 4,549,040. This application Jun. 14, 1985, Ser. No. 744,783

Int. Cl.[4] F16B *2/02*

U.S. Cl. 403—405.1 **6 Claims**



1. An elongated fastener strip of generally channel-shaped cross-section including a web having legs projecting from opposite side edges thereof in the same direction, one said leg having a projecting length from said web which is substantially shorter than the length of the other leg to define short and long legs, and generally keyhole-shaped slots in said web having large opening areas and narrow opening areas extending therefrom generally longitudinally of said strip.

4. A fastener strip of generally channel-shaped cross-section including a web having legs projecting from opposite side edges thereof in the same direction, bolt and nut assemblies including bolts having one end portion thereof attached to said web and projecting therefrom in the same direction as said legs, said bolts having enlargements on the opposite end portions thereof in the form of a nut or bolt head, and said bolts being located substantially closer to one of said legs than to the other said leg.

4,620,816

BIPEDAL GUIDANCE SYSTEM AND METHOD

Jeffrey H. Kupfer, 312 Washington St., Bldg. 2, Apt. 4, Wellesley, Mass. 02181

Filed Nov. 15, 1984, Ser. No. 671,548

Int. Cl.[4] E01F *11/00*

U.S. Cl. 404—6 **7 Claims**

1. A bipedal guidance system for permitting a person whose vision is impaired to ascertain his or her location within an area having boundaries and a walking surface comprising:

a first set of tactual stimuli generally continuously distributed along a first portion of the walking surface extending from the boundaries inwardly for a first predetermined distance, all of the tactual stimuli of the first set having substantially the same physical characteristics;

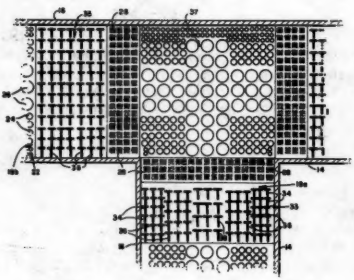
a second set of tactual stimuli generally continuously distributed along a second portion of the walking surface extending inwardly from the first portion of the walking surface for a second predetermined distance, all of the tactual stimuli of the second set having substantially the same physical characteristics;

a third set of tactual stimuli generally continuously distributed along a third portion of the walking surface extending inwardly from the second portion of the walking surface for a third predeterminend distance, all of the tactual stimuli of the third set having substantially the same physical characteristics, the physical characteristics of the stimuli of each of the three sets differing so that the three sets of stimuli are distinguishable from each other by the touch of a person traversing the walking surface, the first, second and third predetermined distances being interrelated to form a tactual gradient so that by determining any of the distances a person whose vision is impaired is able to determine the spatial dimension of the area; and

a fourth set of tactual stimuli generally continuously distributed over a fourth portion of the walking surface, the fourth set of tactual stimuli being positioned to indicate a particular obstacle or landmark.

4. A method for guiding a person whose vision is impaired along an area having boundaries and a walking surface comprising:

providing a first set of tactual stimuli generally continuously distributed along a first portion of the walking surface, extending from the boundaries inwardly for a first predetermined distance;



providing a second set of tactual stimuli generally continuously distributed along a second portion of the walking surface extending inwardly from the first portion of the walking surface for a second predetermined distance;

providing a third set of tactual stimuli generally continuously distributed along a third portion of the walking surface extending inwardly from the second portion of the walking surface for a third predetermined distance, the physical characteristics of the stimuli of each of the three sets differing in a predetermined manner;

training a person whose vision is impaired to discriminate the tactual gradient formed by the sets of tactual stimuli and to distinguish between the three sets of stimuli by touch as the person traverses the walking surface to permit the person to ascertain his or her location within the area and the spatial dimensions of the area;

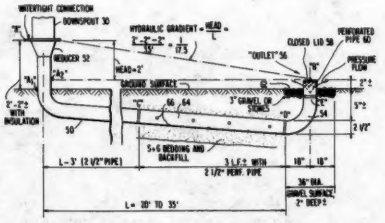
providing a fourth set of tactual stimuli generally continuously distributed along a fourth portion of the walking surface, to indicate an obstacle or landmark; and

training the person to distinguish between the fourth set of tactual stimuli and the other three sets of the tactual stimulus gradient by touch as the person is traversing the walking surface to permit the person to identify the location of the obstacle or landmark.

4,620,817
UNDERGROUND DISCHARGE FOR DOWNSPOUTS AND SUMP PUMPS

Jerome J. Cushing, 705 N. Western Avenue, Park Ridge, Ill. 60068

Filed Aug. 17, 1984, Ser. No. 641,669
Int. Cl.[4] E02B *11/00*; E04D *13/08*; E02D *19/00*
U.S. Cl. 405—43 **20 Claims**



1. A discharge system for distributing discharge water (from rains) from a building, said system comprising a discharge pipe having an aboveground inlet adjacent said building, an underground discharge pipe section and a normally-open aboveground outlet located at a desired distance from said building for discharging water from a remote end of said underground discharge pipe section only when said underground discharge pipe section is full, said above ground outlet being normally open in the absence of discharge water pressure at said outlet but only discharging water in response to the pressure of said discharge water in said underground discharge pipe section when water entering said inlet builds up a pressure head higher than the elevation of said outlet, the ground elevation at said outlet being no lower than the ground elevation at said inlet and said underground pipe section having having a plurality of perforations for discharging water into ground surrounding said underground pipe section to avoid stagnant water or freeze up after the discharge from said aboveground outlet has stopped.

4,620,818
FLOWLINE CONNECTION MEANS

Carl G. Langner, Spring, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed May 25, 1984, Ser. No. 614,425
Int. Cl.[4] F16L *1/00*
U.S. Cl. 405—169 **12 Claims**

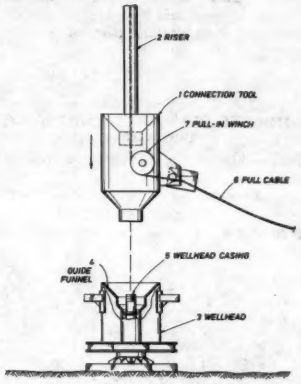
1. A method for connecting a flowline to a subsea structure comprising:

deploying a riser and flowline connection tool downwardly to the subsea structure;

landing and securing the connection tool onto the subsea structure;

pulling a flowline terminal head, the terminal head being connected to the flowline, to the flowline connection tool;

bending the flowline terminal head into a curve having two connected legs, one leg extending upwardly alongside the subsea structure and the other leg extending laterally away from the subsea structure;



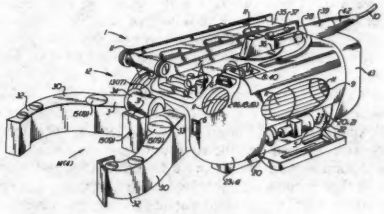
securing the flowline terminal head to the subsea structure; and

recovering the flowline connection tool to the surface.

4,620,819
SUBMARINE WORKING EQUIPMENT

George E. Marsland; Heinz Marschner, both of Kressbronn; Klaüs Wiemer, Stuttgart; Thomas Weyer, Oberteuringen, and Hubert Knoblauch, Hagnau, all of Fed. Rep. of Germany, assignors to ZF-Herion Systemtechnik GmbH, Friedrichshafen, Fed. Rep. of Germany

Continuation of Ser. No. 460,606, Jan. 24, 1983, abandoned. This application Apr. 15, 1985, Ser. No. 722,757
Claims priority, application Fed. Rep. of Germany, Jan. 23, 1982, 3202106
Int. Cl.[4] B63C *11/34*
U.S. Cl. 405—185 **9 Claims**



1. In a submarine working equipment comprising an equipment carrier to which are mounted operating implements, light sources, orientation instruments and control instruments, and driving elements and a main grab for securing said equipment to an object to be worked on, said working equipment being held captive and supplied with power by a connecting and supply cable wherein said equipment carrier is a self-supporting hollow body, penetrated by flow channels angularly disposed in relation to each other, in which said driving elements are situated, the improvement wherein on one end of said hollow body there is provided a grab bearing assembly for said main grab which is supported substantially adjacent the mass center of the equipment, said grab bearing assembly permitting movement of said main grab about longitudinal and transverse axes, said main grab comprising two arms inwardly pivotable

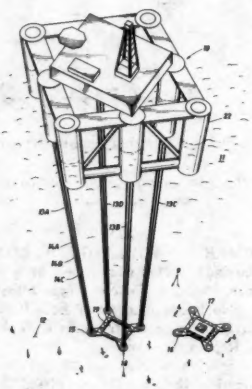
in opposite directions cooperating with an abutment in the longitudinal axis, and a support movable about said longitudinal and transverse axes, said main grab being powered by way of said supply cable, said body being reinforced by said grab bearing assembly and said grab bearing assembly being protected by said body from outside interference by its location in said recess.

4,620,820

TENSION LEG PLATFORM ANCHORING METHOD AND APPARATUS

Bruce G. Collipp, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Mar. 27, 1985, Ser. No. 716,319
Int. Cl.[4] E02D *5/54*
U.S. Cl. 405—224 **13 Claims**



1. A tension leg platform anchor apparatus adapted to be positioned on a marine bottom of a body of water, to secure a tension leg platform to said marine bottom, said tension leg platform having a buoyant hull adapted to float in said body of water and a plurality of tension legs depending vertically downward from said buoyant hull a common distance, each tension leg formed from a plurality of flexible tethers, said tension leg platform anchor apparatus comprising:

anchor means securable to said marine bottom by anchor piles,

a tether base operatively connectable when positioned adjacent said tension leg platform to the lower ends of said flexible tethers forming said tension legs, said tether base operatively connectable to said anchor means, and

connection means comprising a first and a second portion, said first portion carriable by said tether base, said second portion carriable by said anchor means, to connect said tether base to said anchor means.

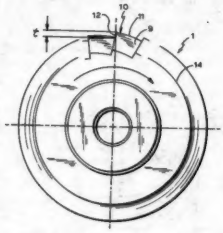
4,620,821

CUTTING DEVICE FOR CUTTING HONEYCOMB LIGHT CONSTRUCTIONS

Dieter Roth, Zell-Harmersbach, Fed. Rep. of Germany, assignor to Prototyp-Werke GmbH, Zell a.H., Fed. Rep. of Germany

Filed Sep. 14, 1984, Ser. No. 651,698
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1983, 3334165
Int. Cl.[4] B23D *61/02*
U.S. Cl. 407—1 **39 Claims**

1. A cutting device for cutting light elements having a honeycomb structure, comprising a cutting member having a direction of rotation and means for connecting with a rotary drive source and having a circumference provided with a plurality of teeth extending around said circumference, said teeth having sharpened tooth flanks forming curved circumferential cutting edges which continually and gradually radially ascend in the direction opposite to the direction of rotation, each of said teeth also having a radially extending edge extending at right angles to said circumferential cutting edge, said radial edge forming a radial step between the flanks of adjacent teeth, and each of said teeth having a thickness in a direction normal to said radial direction which gradually increases in a direction radially inward of said to tooth flanks.

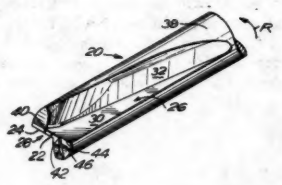


4,620,822

FLAT BOTTOM HOLE DRILL

Sazzadul Haque, Troy, Mich., and Terry A. Schroeder, Ft. Wayne, Ind., assignors to General Electric Company, Detroit, Mich.

Continuation-in-part of Ser. No. 359,051, Mar. 17, 1982, abandoned. This application May 21, 1985, Ser. No. 736,638
Int. Cl.[4] B23B *51/00*
U.S. Cl. 408—224 **10 Claims**



1. A flat bottom hole drill having a substantially cylindrical side surface and opposed mounting and cutting ends, said drill comprising:

a primary cutting edge at the cutting end of said drill, said primary cutting edge extending radially and perpendicularly across the longitudinal axis of said drill to an outer primary cutting terminus disposed intermediate said longitudinal axis and the cylindrical side surface of said drill;

a secondary cutting edge disposed at the cutting end of said drill and substantially diametrically opposed to said primary cutting edge, said secondary cutting edge extending radially inwardly from said cylindrical side surface generally parallel to the primary cutting edge for a distance at least equal to the radial distance from said cylindrical side surface to said outer primary cutting terminus, said secondary cutting edge being offset from said primary cutting edge along the longitudinal axis of said drill and away from said cutting end of said drill by a distance selected to ensure that the forces on both the primary and secondary cutting edges will be substantially equal; and

primary and secondary flutes extending toward the mounting end of said drill and away from said primary and secondary cutting edges respectively, said primary flute being defined by a first primary planar surface disposed

parallel to said primary cutting edge and said longitudinal axis of said drill and a second primary flute surface angularly disposed with respect to both said primary cutting edge and said longitudinal axis of said drill, said secondary flute being defined by a first secondary flute planar surface disposed parallel to both said secondary cutting edge and said longitudinal axis of said drill and a second secondary flute surface angularly disposed with respect to both said secondary cutting edge and said longitudinal axis of said drill, and primary and secondary flute angles being defined by the intersections of said first and second primary flute surfaces and said first and second secondary flute surfaces repectively, and said primary and secondary flute angles each being greater than 90°, whereby said primary cutting edge drills the radially innermost portion of a hole and the secondary cutting edge drills the radially outermost portion of the hole, and chips of material cut by the primary cutting edge are channeled through the primary flute and chips of material cut by the secondary cutting edge are channeled through the secondary flute.

4,620,823

PORTABLE TUBE MILLING TOOL

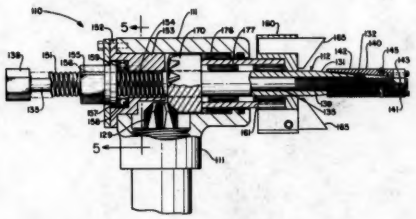
Tollief O. Hillestad, 2930 Seville Rd., Rittman, Ohio 44270

Continuation-in-part of Ser. No. 213,814, Dec. 8, 1980. This application Jul. 29, 1982, Ser. No. 402,838

The portion of the term of this patent subsequent to May 22, 2001, has been disclaimed.

Int. Cl.[4] B23C *3/02*

U.S. Cl. 409—178 **9 Claims**



1. A portable milling tool, comprising:

a housing, said housing substantially enclosing an internal shaft guide, a pinion gear and drive gear, said housing further having a shaft extending through a portion thereof, one end of said shaft being tapered, said shaft having a remaining end portion;

a collet means for securing a work piece, said collet means residing upon said tapered shaft;

said remaining end of said shaft extending through another portion of said housing and having a feed nut means for causing said shaft to move forward or backward with respect to said housing and said shaft guide, said shaft guide having a bore therein, said remaining shaft end matingly engaging said bore of said shaft guide in an axial direction, said shaft being incapable of rotation in said bore of said shaft guide;

said pinion gear connected to said drive gear,

means for mounting said drive gear for rotation within said housing coaxially with and axially spaced apart from said shaft guide, and a milling head, said drive gear connected to said milling head.

4,620,824

HIGH-SPEED DRIVING ADAPTER FOR BORING, MILLING AND SIMILAR MACHINE TOOLS

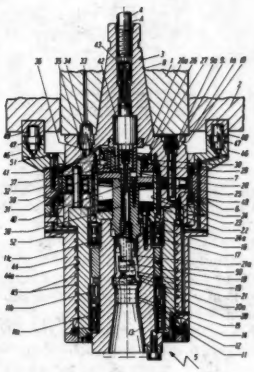
Rolf Eckstein, Roedental; Siegfried Buhl, and Jürgen Krümm, both of Coburg, all of Fed. Rep. of Germany, assignors to Werkzeugmaschinenfabrik Adolf Waldrich Coburg GmbH & Co., Coburg, Fed. Rep. of Germany

Filed Jan. 8, 1985, Ser. No. 689,626

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1984, 8402787[U]

Int. Cl.[4] B23C *1/00*

U.S. Cl. 409—233 **6 Claims**



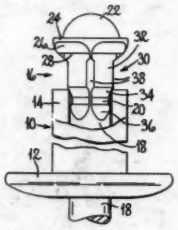
1. In a high-speed driving adapter for boring, milling and similar machine tools, including: a gear housing which can be connected to a spindle housing of the machine tool so as to be fixed against rotation with respect thereto; a drive shaft which is supported rotatably in said gear housing and has a taper shank which fits into a conical receiving bore of a machine tool spindle of the machine tool; a bearing sleeve which is secured to a front end of said drive shaft; a tool-receiving spindle which is supported rotatably in said bearing sleeve and has a conical receiving bore for said tool taper shank of a boring or milling tool, which receiving bore is coaxial with respect to said drive shaft; and a sun-and-planet gear arrangement which is provided between said drive shaft and said tool-receiving spindle, an outer gear of said sun-and-planet gear arrangement being connected to said gear housing a sun gear of said sun-and-planet gear arrangement being connected to said tool-receiving spindle, and planetary wheels of said sun-and-planet gear arrangement being rotatably supported on said drive shaft; the improvement comprising wherein said sun gear is hollow thereby defining a cavity and concentrically surrounds said collect carrier, wherein a collect carrier is provided with a center ejecting pin and a collet and is axially movably supported in a coaxial bore in the tool-receiving spindle, said collet having ends which are constructed as claws and can engage an annular groove provided at the free end of a tool taper shank; wherein a cup spring arrangement is arranged concentrically with respect to said collet carrier and in said cavity in said sun gear, said cup spring arrangement urging said collet carrier away from said receiving bore; and wherein means are provided for releasing said collet and ejecting a tool taper shank, including a hydraulically actuated piston which acts onto said collet carrier in a direction opposite to the spring pressure and which is provided in a coaxial bore in said drive shaft.

4,620,825

PULL-TYPE BLIND-RIVETING ASSEMBLIES

Peter Potzas, Buseck, Fed. Rep. of Germany, assignor to USM Corporation, Farmington, Conn.

Filed Nov. 26, 1984, Ser. No. 674,976
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1983, 3343786
Int. Cl.[4] F16B *19/10*
U.S. Cl. 411—34 3 Claims



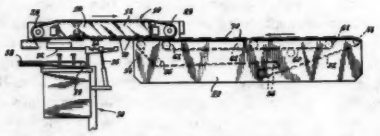
1. A pull-type blind-riveting assembly comprising a hollow rivet and a mandrel which includes a head and a cylindrical pulling portion, the mandrel head having a square pyramidal under-surface which provides radial ridges to cause the tail end of the rivet to split into petals when the mandrel head is pulled into it on setting the rivet, characterized in that the under-surface of the mandrel head terminates at a plane normal to the axis of the stem where it joins a trailing portion of the mandrel stem which is of square cross-section symmetrically disposed within said plane, the length of each side of said cross-section being less than the diameter of the cylindrical pulling portion of the mandrel and the diagonals across said cross section being greater, said square cross section of said trailing portion thus providing diagonally opposed edges which project beyond the periphery of said pulling portion of the mandrel stem and begin to deform the tail end of the rivet into a squared configuration in a rivet-setting operation before the pyramidal under-surface of the mandrel head reaches it.

4,620,826

MATERIALS HANDLING APPARATUS

Manuel J. Rubio, Bridgeport, Conn., and Alberto de la Vega, Garcia, Mexico, assignors to Roberto Gonzales Barrera, Monterrey, Mexico

Filed Mar. 2, 1984, Ser. No. 585,608
Int. Cl.[4] B65G *57/03*
U.S. Cl. 414—73 6 Claims



1. In article conveying means, apparatus that transfers articles from one location to another by means of a moveable perforated belt that is positioned with its upper surface juxtaposed to the under-surface of a vacuum chamber having an apertured bottom, with said articles suspended from the underside of said belt through operation of vacuum from said vacuum chamber acting thereon via said apertures and a multiplicity of performations in said belt, wherein the improvement comprises

a flat plate that has a layer of compressible material affixed to its underside, which plate is in parallel planar relationship to the top of the apertured bottom of said vacuum chamber, and is moveable vertically downward to such an extent that said compressible material is compressed against the top surface of said bottom and is moveable vertically upward by a distance such that said compressible material is in closed spaced-apart relationship to the top of said bottom,

motion means interconnected with said plate to cause it to move vertically upward and downward,

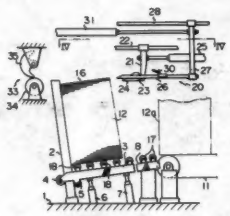
detection means for detecting when one among said articles suspended from said belt has been moved by said belt to a position directly beneath said plate and for causing said motion means thereon to actuate and cause to move said plate vertically downward until said compressible material impinges upon the top of said apertured bottom and is compressed between it and said plate to seal off the apertures in the region of said plate from the vacuum in said box and to introduce a slight positive pressure into said apertures by the piston effect of said compressible material being at least partially thrust into said apertures, and for causing said motion means thereafter to move said plate vertically upward until said compressible material is in closely spaced-apart relationship to said top of said apertured bottom.

4,620,827

APPARATUS FOR SUPPLYING FLAT SHEETS SUCH AS PULP SHEETS

Tadanori Sameshima, Fuji, and Akito Kakigi, Fujinomiya, both of Japan, assignors to Honshu Seishi Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 18, 1984, Ser. No. 683,197
Claims priority, application Japan, Dec. 26, 1983, 58-249466
Int. Cl.[4] B65H *3/32*
U.S. Cl. 414—114 3 Claims



1. An apparatus for supplying flat sheets comprising:

a platform for substantially vertically supporting a pile of a plurality of flat sheets;

means for elevating said platform step by step by a predetermined amount at one time;

a single wedge member provided so as to be reciprocatingly movable in the transverse direction with respect to said pile;

conveying means having fork tines which are arranged on both sides of said wedge member and are provided so as to be reciprocatingly movable in the transverse direction with respect to said pile and stopping members which are movable integrally with said fork tines; and

feed means for sending the flat sheets which are carried by said conveying means to the next process step;

wherein said fork tines are inserted into a gap formed by inserting said wedge member into said pile, said fork tines are moved further forward in order to allow said stopping members to come into engagement with edge portions of said flat sheets, thereby conveying the flat sheets on said fork tines to said feed means.

4,620,828
DEVICE FOR TILTING AND TURNING COKE-OVEN DOORS FOR MAINTENANCE PURPOSES

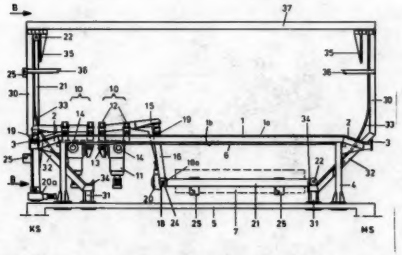
Otto Lemke, Recklinghausen, Fed. Rep. of Germany, assignor to Carl Still GmbH & Co. KG., Fed. Rep. of Germany

Filed Dec. 5, 1983, Ser. No. 557,911

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1982, 3245138

Int. Cl.⁴ B66F *11/00*

U.S. Cl. 414—684.3 **8 Claims**



1. A tilting and turning device for coke oven doors, comprising a fixed guide rig including a bottom stop and a trackway extending upwardly from said stop, a coke oven door support frame having a coke oven door engaging portion with an end part having a roller engaged on said trackway, a drive device articulated to said coke oven door support frame, and means defining a guide track over said stop over which said roller of said door support frame is movable.

4,620,829
DEVICE FOR COUNTER-BALANCING THE FORCES DUE TO GRAVITY IN A ROBOT ARM

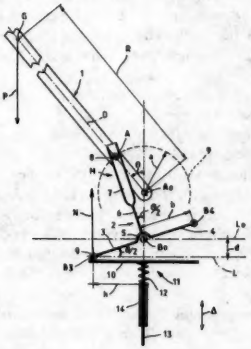
Jacques M. Herve, Pommeuse, France, assignor to Ecole Centrale Des Arts et Manufactures, Paris, FranceX

Filed May 23, 1985, Ser. No. 737,082

Claims priority, application France, May 29, 1984, 84 08383

Int. Cl.⁴ B66C *23/72*

U.S. Cl. 414—720 **10 Claims**



1. In a device for counter-balancing the gravity forces on a structure such as a robot arm hinged for rotation about a horizontal axis, the improvement wherein it incorporates:

(a) a rigid auxiliary component hinged about a second horizontal axis parallel to said horizontal axis of the robot arm;

(b) two transverse arms to said auxiliary component, said arms extending on each side of said second horizontal axis, these said two transverse arms having distal ends which are symmetrical relative to said second horizontal axis and forming a straight line which intersects said second horizontal axis;

(c) a component having a straight portion against which said ends of the transverse arms bear;

(d) means mounting said component for translational movement from an initial position;

(e) means subjecting said translationally movable component to a return force towards said initial position, said force at any instantaneous position of said translationally movable component being proportional to the distance between said initial position and said instantaneous position of said translationally movable component, and

(f) means for driving said rigid auxiliary component rotatably about the second horizontal axis at an angular velocity whose modulus is equal to half that of said robot arm;

the assembly being calibrated angularly, such that (A) when the robot arm is vertical said two distal ends of the transverse arms bear simultaneously against the said straight portion of said translationally movable component which then occupies said initial position, said translationally movable component then not being subjected to any return force and (B) the constant of proportionality between said return force and the amplitude of the displacement of said movable component, and the distance from said second horizontal axis to the ends of the transverse arms being chosen in such a way that counter-balancing is achieved.

4,620,830
JOINT TYPE ROBOT

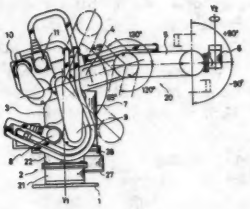
Akira Tsuchihasi, Nagareyama; Ichirou Takahashi, Narashino, and Norihisa Miyake, Chiyodamura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 28, 1983, Ser. No. 546,578

Claims priority, application Japan, Oct. 29, 1982, 57-189031; Oct. 29, 1982, 57-189030

Int. Cl.⁴ B25J *9/00*

U.S. Cl. 414—735 **5 Claims**



1. A joint type robot comprising:

a fixed base,

a swivel base mounted for rotation on said fixed base about a vertical axis,

a motor base fixed on said swivel base for rotation with said swivel base, said motor base having a first pair of parallel, overlapped and oppositely directed motor receiving recesses therein,

an arm mechanism mounted on said motor base, said arm mechanism having an upper arm attached to said motor base for rotation about a first horizontal axis and further having a rearwardly extending portion extending rearwardly of said first horizontal axis and a front arm mounted on said upper arm for rotation about a second horizontal axis, said rearwardly extending portion having a second pair of parallel, overlapped and oppositely directed motor receiving recesses thereon,

a wrist having at least two degrees of freedom mounted on said front arm opposite said second horizontal axis of rotation,

a first pair of driving motors, each said driving motor having an output shaft and an axis of output shaft rotation,

mounted in said first pair of recesses with said axes of output shaft rotation parallel and said output shaft ends directed in 180 degree opposite directions with respect to each other such that said first motors are overlapped on said motor base to provide a more compact structure, one of the said first pair of driving motors driving said upper arm and the other driving said front arm,

a second pair of driving motors, each said driving motor having an output shaft and an axis of output shaft rotation, mounted in said second pair of recesses on said rearwardly extending portion of said upper arm with said axes of output shaft rotation parallel and said output shaft ends directed in 180 degree opposite directions with respect to each other such that said second motors are overlapped on said arm to provide a more compact structure, one of said second pair driving motors driving one of said at least two degrees of freedom of said wrist, the other of said second driving motors driving another of said at least two degrees of freedom of said wrist, and

a driving motor having a vertical axis of rotation mounted on said swivel base outside said motor base and out of the range of motion of said arm mechanism for driving said swivel base about said fixed base.

4. A joint type robot including a swivel base, a motor base fixed on said swivel base, and an arm mechanism including a wrist mounted on said motor base,

said swivel base comprising;

a first base,

an intermediate disc, and

a second base,

said first base including a fixed base and a rotary base mounted on said fixed base for rotation about a vertical first axis, said rotary base of said first base supporting a driving motor having a vertical second axis of rotation, said driving motor mounted at the periphery of said swivel base, said motor lying outside said motor base and outside the range of motion of said arm mechanism,

said intermediate disc fixed to said rotary base and holding a driven shaft connected to said fixed base through a harmonic drive,

said second base fixed with respect to said rotary base of said first base and said intermediate disc and having a bed for receiving a motor base,

said driving motor connected to said driven shaft by a conduction belt to transmit the force of rotation from said driving motor to said driven shaft whereby said swivel base is rotated, said harmonic drive and said driven shaft housed in a hollow portion of said swivel base,

said arm mechanism mounted on said motor base for rotation about a horizontal axis, said arm mechanism having an upper arm mounted on said motor base and a front arm mounted on said upper arm, said upper arm having a rearwardly extending portion extending rearwardly of said horizontal axis, said rearwardly extending portion having mounted thereon at least one driving motor to balance said arm mechanism about said horizontal axis,

said motor base including a pair of upright sidewalls supporting said arm mechanism fixed on said swivel base, a reinforcing member connecting said sidewalls, said reinforcing members and said sidewalls forming a notch to receive said rearwardly extending portion of said upper arm as said upper arm mechanism is elevated about said horizontal axis.

4,620,831

INDUSTRIAL ROBOT GOVERNED BY A PROGRAMMABLE CONTROLLER

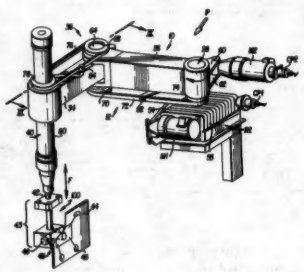
Jean-Pierre Poncet, St. Ismier; Michel Joumard, Grenoble; Robert Bonneton, Fontaine, and Robert Chevaleyre, Domene, all of France, assignors to Merlin Gerin; Ateliers Bouvier and Allibert, all of Grenoble, France

Filed May 31, 1983, Ser. No. 499,492

Claims priority, application France, Jun. 7, 1982, 82 09992

Int. Cl.[4] B66C *23/02*

U.S. Cl. 414—744 A **5 Claims**



1. An industrial robot equipped with an articulated manipulator having a main arm rotatable relative to a stationary housing and coupled mechanically to a forearm attached to a gripping component, and controlled by a programmable controller directing and monitoring the robot's operating cycle, the manipulator having a kinematic system comprising:

a first means for vertical transfer provided between said gripping component and the free end of said forearm,

a swivel link between the main arm and the forearm, comprising a first vertical free-turning, loose spindle onto which said main arm and forearm are mounted by means of ballbearings,

a second vertical spindle rotatably supported in the stationary housing and fixedly supporting said main arm and lying parallel to said first loose spindle of said swivel link in such a way that both main and forearms pivot in a fixed horizontal plane to constitute a kinematic system functioning in cylindrical coordinates,

a first servo-motor for driving said main arm in rotation around said second spindle,

a second servo-motor for driving said forearm in rotation around said first spindle,

an auxiliary transmission to transmit the movement of said main arm and forearm, and composed of a pair of first and second gear-wheels fixed permanently at opposite ends of said first loose spindle of said swivel link and co-operating respectively with a pair of first and second endless drive belts lying respectively in the direction of the forearm and the main arm,

said first belt being wound between said first gear-wheel and a third gear-wheel fixed to said first means for vertical transfer,

said second belt wound between said opposite second gear-wheel on said first spindle and a fourth gear-wheel mounted coaxially on the second supporting spindle and fixed to said housing,

and programming means co-operating with said servo-motors for coordinating the two servo-controlled rotating motions of said main arm and forearm so as to drive the gripping component through a linear trajectory at the beginning of the robot's operating cycle.

4,620,832

FURNACE LOADING SYSTEM

Norman S. Cay, Los Gatos, Calif., assignor to Motion Manufacturing, Inc., Santa Clara, Calif.

Filed Mar. 7, 1984, Ser. No. 587,179
Int. Cl.[4] H01L *21/324;* F27D *3/00*
U.S. Cl. 414—786 1 Claim

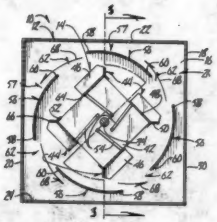
1. A method of loading and unloading one or more receptacles for loading semiconductor parts into a furnace tube used in semiconductor processing using an elongated carrier having a support end with upwardly and downwardly facing support surfaces and a carrying end with means for supporting such receptacles for movement, the downwardly facing support surface of the carrier support end having a support point and the carrier has a mass distribution around the support point which includes more weight at the support end than at the carrying end when no receptacles are carried thereon and less weight at the support end than at the carrying end when a receptacle is carried thereon, and also using carrier support means having upwardly and downwardly facing support surfaces positioned facing, respectively, the downwardly and upwardly facing support surfaces of the carrier support end, comprising the steps of: supporting the carrier from one end thereof in a cantilevered manner, by contacting the support point of the carrier support end with the upwardly facing surface of the carrier support means providing means for controlling the elevation of the carrier such that the carrier is movable between a raised position in which the carrier engages and supports receptacles thereon and a lowered position for depositing and disengaging receptacles within a furnace tube, moving the carrier into and out of a furnace tube in a direction lengthwise to the carrier, and continuously supporting the carrier in a cantilevered manner out of contact with adjacent surfaces throughout loading and unloading cycles, in which the loading cycle includes the steps of moving the carrier while raised from a first position outside the furnace tube forward to a second position within the furnace tube, with the downwardly facing support surface of the carrier support means contacting the upwardly facing support surface of the carrier support portion, lowering the carrier to deposit receptacles within the furnace tube, by said lowering, removing weight from the carrying end of the carrier and rotating the carrier about the support point in response to the mass distribution until the upwardly facing support surface of the carrier support means contacts the downwardly facing support surface of the carrier support end at least at a point in addition to and longitudinally spaced from the support point, and moving the lowered carrier rearward from said second to said first positions whereby the receptacles are deposited in the furnace tube, and the unloading cycle includes the steps of moving the lowered carrier forward from said first to said second positions with the upwardly facing support surface of carrier support means contacting the downwardly facing support surface of the carrier support end at least at a point in addition to and longitudinally spaced from the support point, raising the carrier to engage and support the receptacles within the furnace tube on the carrier, by said raising, adding weight to the carrying end of the carrier and rotating the carrier about the support point in response to the mass distribution until the downwardly facing support surface of the carrier support means contacts the upwardly facing support surface of the carrier support portion, and moving the carrier rearward from said second to said first positions whereby the receptacles are removed from the furnace tube.

4,620,833

FAN ROTOR

Darold I. Townsend, 730 Cherry St., Cherokee, Iowa 51012

Filed Dec. 14, 1984, Ser. No. 681,884
Int. Cl.[4] F04D *29/28, 29/44*
U.S. Cl. 415—211 2 Claims



1. A fan rotor assembly comprising:

a housing having opposite side walls and a perimeter wall interconnecting said side walls so as to define an internal chamber, and having an air inlet opening in at least one of said side walls, and an air outlet opening in said perimeter wall;

an elongated rotatable drive shaft extending between said side walls of said housing and having a longitudinal axis disposed perpendicularly to said side walls;

a polygonally shaped rotor plate secured to said drive shaft for rotation therewith and being disposed in parallel relation to said side walls of said housing and having a perimeter edge;

a plurality of blade members secured to said rotor plate for rotation therewith, each of said blade members including a flat first panel having opposite forward and rearward edges and extending along the perimeter edge of said rotor plate in perpendicular relation thereto with said forward edge being closer to said drive shaft than said rearward edge and a second panel having a forward edge attached to the rearward edge of said first panel and a rearward edge spaced radially outwardly from said rearward edge of said first panel such that said first panel and said second panel form a substantially concave surface from the forward edge of said first panel to the rearward edge of said second panel, said concave surface being presented radially outwardly;

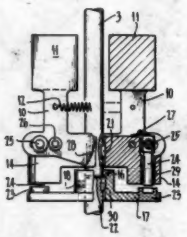
each of said blade members further including opposite side wings disposed in parallel relation to said side walls of said housing, and

power means for rotating said drive shaft, and thereby said rotor plate and said blade members, whereby air is drawn through said inlet opening into said internal chamber at a first velocity and pushed through a substantially circular path by said concave surface of said blade member so as to be expelled through said outlet opening at a second increased velocity and such that rotation of said rotor plate and blade members produces increased pressure on said concave surface of said blades and decreased pressure radially inwardly from said concave surface thereby forcing said blades into secure engagement with said perimeter edge of said rotor plate.

4,620,834
WIND MACHINE WITH CLUTCH HAVING LOSH MOTION CHARACTERISTIC

John P. Baird, Fox Hill, via Hall, New South Wales, Australia (2618); Ian W. Linnett, 22 Bisdee Street, Hughes, Australian Capital Territory, Australia (2605), and William J. MacLeod, 18 Gouger Street, Torrens, Australian Capital Territory, Australia (2607)

Continuation of Ser. No. 361,485, Mar. 24, 1982, abandoned. This application Jun. 14, 1985, Ser. No. 744,665
Claims priority, application Australia, Apr. 3, 1981, PE8300
Int. Cl.[4] F03D *11/02*
U.S. Cl. 416—32 4 Claims

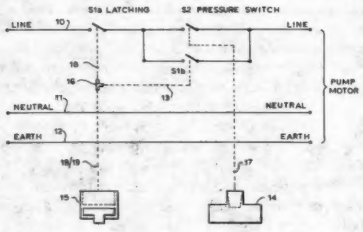


1. In a wind-driven machine: a wind-driven member; a first rotary shaft driven by the wind-driven member; a second rotary shaft; a centrifugal dog clutch having engaged and disengaged positions for drivingly connecting and disconnecting, respectively, said first and second shafts; bias means resiliently urging said clutch toward a disengaged position; at least one centrifugal weight means rotatable with said first shaft and movable along a path toward and away from said first shaft in response to decreasing and increasing rotational speed of said first shaft, and a clutch-control linkage interconnecting said centrifugal weight means and said clutch for engaging said clutch, at a predetermined high speed of said first shaft against the force of said bias means and for disengaging said clutch at a speed of said first shaft which is lower than said predetermined high speed, said linkage including a lost motion device which, upon decreasing rotational speed of said first shaft below said predetermined high speed, permits limited independent movement of said weight toward said first shaft without causing engagement of said clutch.

4,620,835
PUMP PROTECTION SYSTEM

Gerald A. Bell, Bransholme Estate, England, assignor to American Standard Inc., New York, N.Y.

Filed Jun. 1, 1984, Ser. No. 616,110
Claims priority, application United Kingdom, Jun. 2, 1983, 83 15154
Int. Cl.[4] F04B *49/08*
U.S. Cl. 417—17 15 Claims

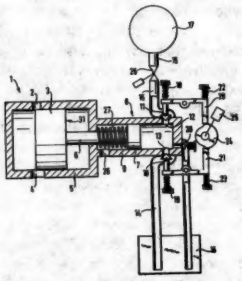


1. A protection system for a liquid pump, comprising a protection switch connected to a sensor for sensing a flow characteristic of liquid flow through the pump and for producing a signal indicative of the existence of that characteristic, means for rendering the pump operative or inoperative in dependence upon the presence or absence of a signal from the sensor, a manual override means for rendering the pump operative in the absence of a signal from the sensor and an override switch to switch off said pump, said override switch being connected to two signal-responsive switches, one for overriding the protection system and the other a latching switch establishing a control line in series with said protection switch.

4,620,836
OIL PUMP WITH OSCILLATING PISTON

Gerhard Brandl, Leonhardstrasse 79, A-8010 Graz, Austria

PCT No. PCT/AT82/00031, § 371 Date Jul. 11, 1983, § 102(e) Date Jul. 11, 1983, PCT Pub. No. WO83/01816, PCT Pub. Date May 26, 1983
PCT Filed Nov. 10, 1982, Ser. No. 519,767
Claims priority, application Austria, Nov. 16, 1981, 4945/81
Int. Cl.[4] F04B *35/00*; F02D *39/10*
U.S. Cl. 417—364 11 Claims



1. A pressure system apparatus connected to a cylinder-piston arrangement of an internal combustion engine for oscillating the piston of the arrangement in opposite directions whereby the piston assumes different positions in the cylinder, the cylinder defining a combustion chamber having inlet and exhaust openings substantially centered between the ends of the cylinder, which comprises a gas cushion resiliently holding the piston in the cylinder; two piston pumps; and substantially identical straight rods extending from the piston of the arrangement in opposite directions for connection to the pump pistons, and each piston pump including a pump cylinder and a pump piston reciprocable therein, the pump piston being rigidly connected to the piston of the arrangement, a first storage device containing a pressure medium, a second storage device held substantially pressureless, conduit means connecting the pump cylinder to the storage devices and permitting flow of the pressure medium between the storage devices and the pump cylinder, a respective valve selectively permitting and stopping flow of the pressure medium from the first storage device into the pump cylinder and flow of the pressure medium from the pump cylinder into the second storage device, and a separate motor controlling the valves independently of the position of the piston in the cylinder of the arrangement; and further comprising a respective guide surrounding the straight rods for glidingly guiding the rods, each guide defining an annular groove surrounding the rod glidingly guided therein and a radial bore spaced from the annular groove towards the pump piston, fuel supply conduit means connected to the radial bores, and each straight rod defining two axially spaced annular grooves, the axially spaced annular grooves alternately connecting the combustion chamber and the radial bores leading to the fuel supply conduit means to the

annular grooves in the guides in dependence on different positions of the piston in the cylinder of the arrangement.

4,620,837

VANE-TYPE ROTARY COMPRESSOR HAVING A SLEEVE FOR ROTATION WITH VANES

Hiroshi Sakamaki, Utsunomiya; Yukio Horikoshi, Kazo, and Kikuji Yanagihashi, Yono, all of Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan

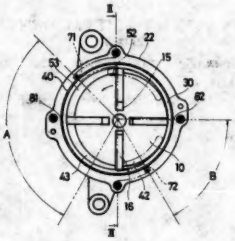
PCT No. PCT/JP84/00060, § 371 Date Oct. 17, 1984, § 102(e) Date Oct. 17, 1984, PCT Pub. No. WO84/03334, PCT Pub. Date Aug. 30, 1984

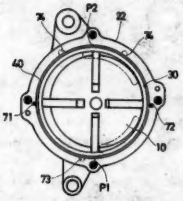
PCT Filed Feb. 22, 1984, Ser. No. 668,268

Claims priority, application Japan, Feb. 23, 1983, 58-047258; Feb. 24, 1983, 58-028608; Mar. 23, 1983, 58-047257; May 20, 1983, 58-087732

Int. Cl.[4] F04C *18/348*

U.S. Cl. 418—173 9 Claims





1. A vane-type rotary compressor having a sleeve for rotation with vanes comprising a center housing, a rotary sleeve mounted in said center housing for rotation with a plurality of vanes movably fitted in a rotor which is eccentrically disposed in said rotary sleeve, an air-bearing room defined between the outer periphery of said rotary sleeve and the inner periphery of said center housing, an inlet port provided in the inner periphery of said center housing and internally connected to a compression working space defined between two adjacent vanes, and at least a pocket provided in the inner periphery of said center housing, characterized in that said pocket is formed in the suction side inner periphery of said center housing.

4,620,838

CHEESE SHREDDER

Roland E. Miller, Lena; Henry Borgardt, Chicago, and John Valek, Cicero, all of Ill., assignors to Kraft, Inc., Glenview, Ill.

Filed Mar. 28, 1984, Ser. No. 594,204

Int. Cl.[4] B29C *47/54*

U.S. Cl. 425—135 13 Claims

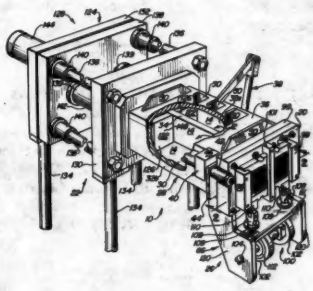
1. Apparatus for forming a quantity of cheese into a plurality of relatively small segments of predetermined configuration, the apparatus comprising:

an elongated chamber having one or more longitudinal interior surfaces for slidably engaging said quantity of cheese;

an extrusion die plate defining a plurality of elongated opening formed therethrough affixed to the forward end of said chamber, each of said elongated openings having a major dimension and a minor dimension;

ram means for forcing cheese forwardly and longitudinally of said chamber at a predetermined speed through said openings in said die plate so as to form a plurality of extrusions, one through each of said openings; and

a cutter assembly spaced from said die plate and operable to cut through each of said extrusions at a predetermined frequency as it emerges from its associated opening to divide each extrusion into a plurality of discrete segments of predetermined dimensions, said frequency being related



to said predetermined dimensions, said frequency being related to said predetermined speed of said ram means such that the dimension of said segment in the direction of extrusion is smaller than the major dimension of each of said elongated openings;

said plurality of openings being arranged in a predetermined pattern defining a perforated area of said die plate, and including perimeter openings, each of said perimeter openings being associated with one or more perimeter surface forming a portion of the perimeter of said perforated area, each of said perimeter surfaces being substantially aligned with one of said one or more longitudinal surfaces of said chamber to prevent maceration and oiling off due to excessive working of cheese;

the cutter assembly being movable across the die piate simultaneous with forward movement of said ram means.

4,620,839

HEAT INSULATOR FOR HOT ISOSTATIC PRESSING APPARATUS

Masato Moritoki, Miki; Takao Fujikawa, Kobe; Kazuo Kitagawa, Kobe, and Junichi Miyanaga, Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Division of Ser. No. 443,566, Nov. 22, 1982, Pat. No. 4,503,319.

This application Sep. 14, 1984, Ser. No. 650,534

Claims priority, application Japan, Nov. 20, 1981, 56-173869[U]; May 17, 1982, 57-083874

Int. Cl.[4] B28B *11/10*

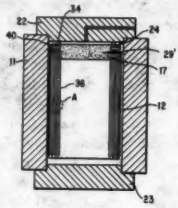
U.S. Cl. 425—405 H 13 Claims

1. A hot isostatic pressing apparatus which comprises a heat insulator including a multi-layered heat insulating body, said multi-layered heat insulating body comprising:

(a) a plurality of non-perforated graphite sheets;

(b) a plurality of perforated graphite sheets, each one of said plurality of perforated graphite sheets being sandwiched between and making at least substantially planar contact

with, but not being bonded to, adjoining ones of said plurality of non-perforated graphite sheets; and



(c) a gas having an extremely low thermal conductivity substantially confined in the perforations in said plurality of perforated graphite sheets.

4,620,840

FURNACE FOR HEATING UP CYLINDRICAL CHARGES

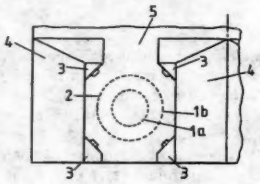
Bernhard Hilge, Mettmenstetten, Switzerland; Carl Kramer, and Martin Knoch, both of Aachen, Fed. Rep. of Germany, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

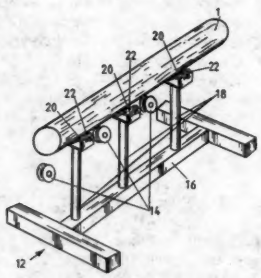
Filed May 17, 1985, Ser. No. 735,391

Claims priority, application Fed. Rep. of Germany, May 18, 1984, 3418603

Int. Cl.[4] F27B *9/14*; F27D *3/00*

U.S. Cl. 432—121 **9 Claims**





1. Furnace for heating billets, rods, tubes and the like cylindrical charges having a longitudinal axis which comprises: at least one treatment chamber having two ends and walls and a mid point, nozzle outlets in said walls which direct jets of heated gas radially with respect to said longitudinal axis and onto the surface of the charge wherein said nozzle outlets are situated in said walls so that the points of impingement of the jet streams on the mantle of the cylindrical charge are such that if the surface of the charge were to be rolled out to form a flat surface, the said points would lie at the corners of equilateral triangles wherein the length of the sides of the equilateral triangles is about the same as the distance between the nozzle outlet face and the surface of a charge of average diameter, feed channels at both ends of the treatment chamber communicating with said nozzles for supplying heated gas to the nozzles, said channels having inlets wherein the feed channels reduce in cross-section from the inlet end to the mid point, a transportation device for moving the charge in the direction parallel to its longitudinal axis into the treatment chamber including a conveyance device for the horizontal movement of the charge and a jacking device for centering the charge in the treatment chamber vertical to the longitudinal axis of the charge and as a function of its size in cross-section, a ventilator fan communicating with said chamber for generating a circulating gas stream arranged above the mid point along the length of said chamber such that it blows out the inlets to said feed channels, and a heating device for heating the gas stream.

4,620,841

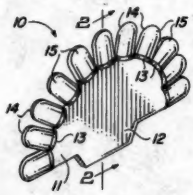
PORCELAIN FUSED TO METAL DENTAL SHADE GUIDE

Frank C. Farrell, and Margaret P. Farrell, both of 18402 N. 70th Dr., Peoria, Ariz. 85345

Filed Dec. 24, 1984, Ser. No. 686,098

Int. Cl.[4] A61C *19/10*

U.S. Cl. 433—26 **20 Claims**



1. A dental shade guide for accurately matching the color and shade of a patient's natural teeth, comprising:

a metal blank;

a plurality of metal bars affixed to said metal blank, said plurality of metal bars further comprising any suitable dental alloy commonly used in the manufacture of dental prostheses;

a layer of any suitable opaque material firmly fused to one end of each of said plurality of metal bars and disposed so that said layer of opaque material is entirely backed by said end of each of said plurality of metal bars;

a layer of any suitable dental glass firmly fused onto said layer of opaque material; and

a layer of any suitable clear glaze firmly fused onto said layer of porcelain.

4,620,842

SELF-ASSEMBLE REVOLVING GLOBE

Su Hui Wang, 428, Nanking W. Road, Taipei, Taiwan

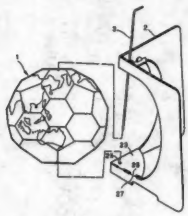
Filed Apr. 16, 1985, Ser. No. 723,868

int. Cl.[4] G09B *27/08*

U.S. Cl. 434—135 **3 Claims**

1. Apparatus for assembly into a terrestrial globe comprising at least one blank of sheet material printed with a map, the blank comprising polygonal segments interconnected by fold lines defining adjoining edges of adjacent segments, wherein the blank includes peripheral segments with unconnected edges, engagement tongues extending from certain of the unconnected edges, foldable tabs extending from others of the

unconnected edges, and slits in the tabs beyond the respective edges of the segments from which the tabs extend for receiving



respective ones of the engagement tongues when the blank is folded to form at least a part of the globe.

4,620,843

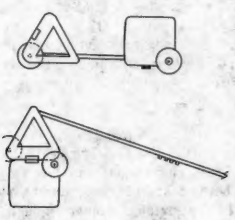
CHILD'S CONSTRUCTION TOY

Richard H. Higginbotham, Sr., and Richard H. Higginbotham, Jr., both of 1303A Sherwood Forest, Houston, Tex. 77043

Continuation-in-part of Ser. No. 410,498, Aug. 23, 1982, abandoned. This application Aug. 9, 1984, Ser. No. 639,491

Int. Cl.[4] A63H *17/00*; A63G *11/00*

U.S. Cl. 446—94 **6 Claims**



1. A construction toy capable of being converted into a plurality of different toy configurations, comprising:

(a) a triangularly-shaped component formed of two matching planar, parallel, and mutually spaced triangular members joined along their respective peripheries by a first set of dowels, said dowels of said first set being mutually parallel, equal in length and substantially equally spaced about the periphery of said triangular members;

(b) a rectangularly-shaped component formed of two matching planar, prallel, and mutually spaced rectangular members joined along their respective peripheries by a second set of dowels, said dowels of said second set being mutually parallel, equal in length and substantially equally spaced about the periphery of said rectangular members, at least three of said dowels of said second set being spaced along one side of said rectangular members and being spaced by substantially the same distance as the dowels of said first set, the triangular members of said triangularly-shaped component having altitudes substantially equal to at least one outside dimension of the rectangular members of said rectangularly-shaped component;

(c) a first elongated board component having means for selectively hooking over a dowel of either of said sets mounted adjacent each end of said first board component on the bottom surface thereof;

(d) a second elongated board component having a plurality of transversely extending slats depending midway of the bottom surface of said second board component, said slats being arranged to form dowel receiving channels therebetween; and

(e) lock means on said triangularly shaped and rectangularly shaped components for fastening them securely to each other to form a stable structure.

4,620,844

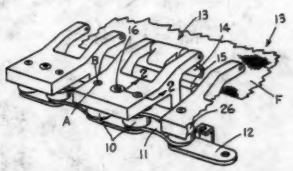
TENTER CHAIN

Charles W. Greene, Spartanburg, and Christopher E. Hosmer, Taylors, both of S.C., assignors to Marshall and Williams Company, Greenville, S.C.

Filed Apr. 24, 1985, Ser. No. 726,481

Int. Cl.[4] F16H *57/04*

U.S. Cl. 474—91 **2 Claims**



1. For use in a tenter chain having spaced horizontal bearings carrying a tenter clip therebetween, a lubricating apparatus for receiving grease from an elongated nozzle of a grease dispensing gun comprising:

a vertical pin extending into each of said bearings carrying chain links and fastening means for said tenter clips;

said bearings having a grease receiving reservoir above and below ball bearings between inner and outer races;

said vertical pins having a vertical passageway and opposed greased dispensing openings communicating with a grease receiving reservoir;

a piston received within said vertical passageways;

a compression spring within said vertical passageways beneath said pistons; and

said piston being depressible in said passageway by said nozzle beneath a grease receiving reservoir and opening said grease receiving reservoir for reception of grease in a grease receiving reservoir;

whereby said piston is urged upwardly in said passageway by said spring following introduction of grease into a reservoir from said passageway avoiding contamination preparatory to the next greasing operation.

4,620,845

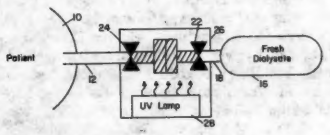
METHOD OF PERITONEAL DIALYSIS INVOLVING ULTRAVIOLET RADIATION OF DIALYSIS APPARATUS

Robert P. Popovich, 2928 Kassarine Pass, Austin, Tex. 78704, and Jack W. Moncrief, 3633 West Lake, Austin, Tex. 78746

Division of Ser. No. 270,800, Jun. 5, 1981, Pat. No. 4,475,900. This application Jun. 28, 1984, Ser. No. 625,801

Int. Cl.[4] A61M *3/00*

U.S. Cl. 604—28 **7 Claims**



1. A method of peritoneal dialysis therapy of a patient having a peritoneum access tube extending through the abdominal wall, for establishing a fluid flow path to the peritoneal cavity, comprising the steps of:

connecting a container of fresh dialysis fluid to said peritoneum access tube;

irradiating the connection junction between the container

and the access tube with a sufficient quantity of ultraviolet radiation so that an antimicrobial effect is obtained at said connection junction; and

infusing the fresh dialysis fluid into the patient.

4,620,846

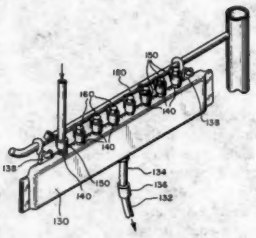
APPARATUS AND METHOD FOR INTRODUCING FLUID INTO AND REMOVING FLUID FROM A LIVING SUBJECT

Edward M. Goldberg, 225 Maple Hill Rd., Glencoe, Ill. 60022, and Seymour Bazell, 9235 N. Latrobe, Skokie, Ill. 60077

Division of Ser. No. 307,188, Sep. 30, 1981, Pat. No. 4,435,171, which is a continuation of Ser. No. 45,294, Jun. 4, 1979, abandoned. This application Jan. 23, 1984, Ser. No. 572,821

Int. Cl.⁴ A61M *1/00*

U.S. Cl. 604—28 **5 Claims**



1. A device for introducing dialysate into, and draining dialysate from, the peritoneal cavity of a human subject, said device comprising:

a first manifold;

means for transporting dialysate out of the first manifold for introduction into a human peritoneal cavity;

means for introducing dialysate into the first manifold, said introducing means including a plurality of separately valved input ports;

a second manifold, isolated from fluid communication with the first manifold;

means for transporting dialysate from the peritoneal cavity into the second manifold;

means for receiving dialysate from the second manifold, said receiving means including a plurality of containers individually coupled to the second manifold by means of separately valved conduits; and

said first and second manifolds being provided in a longitudinally divided, elongated, flexible tubular member that is sized to fit around the abdomen of a human subject.

4,620,847

DEVICE FOR ADMINISTERING POWDERED SUBSTANCES

Nikolai M. Shishov; Vladimir E. Zelenetsky; Nadezhda A. Demina; Ivan M. Bondarev; Alexandr N. Cherny, all of Moscow; Valery A. Moskvitin, Belgorod-Dnestrovsky, all of U.S.S.R., and Evgeny E. Rylov, deceased, late of Moscow, U.S.S.R. (by Nina Alexeevna Rybakova, administratrix), assignors to Vsesojuzny Nauchno-Issledovatelsky Institut Meditsinskikh Polimerov, Moscow, U.S.S.R.

Filed May 6, 1984, Ser. No. 617,506

Int. Cl.⁴ A61M *13/00*

U.S. Cl. 604—58 **2 Claims**

1. A device for administering powdered substances into deep-seated cavities of an organism, said device comprising a sprayer having a cylinder and a piston movable within said cylinder; a conveying line series-connected to said sprayer; a drainage pipe forming part of said conveying line; a catheter in said conveying line, arranged coaxially inside said drainage pipe and adapted to be introduced into a deep-seated cavity of an organism for spraying a powdered substance thereinside;

a hollow cylindrical body connected at one end to said sprayer;

a diametral partition dividing said hollow body;

a cover adapted to close said hollow cylindrical body at an end opposite to said one end;

a first sleeve having an opening and positioned in said diametral partition such that said opening is coaxial with said conveying line;

said first sleeve receiving an end of said catheter and connecting it to said sprayer;

a second sleeve having an opening and positioned in said cover coaxially with said opening of said first sleeve;

said second sleeve retaining said drainage pipe.

4,620,848

POWERED INFUSION APPARATUS

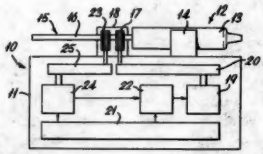
Ian A. Sutherland, Harpenden, and Geoffrey R. Chambers, Northwood, both of England, assignors to National Research Development Corporation, London, England

Filed Sep. 17, 1985, Ser. No. 777,073

Claims priority, application United Kingdom, Sep. 19, 1984, 8423749

Int. Cl.⁴ A61M *5/00*

U.S. Cl. 604—154 **10 Claims**



1. Apparatus comprising:

a housing carrying a toothed roller, an electric motor, a transmission operably coupling said motor to drive said toothed roller, a further roller, a monitor operably coupled with said further roller to generate electrical signals representing rotation of such roller and attachment means; and

a syringe including a barrel and plunger;

said plunger being of a plastics material having a smooth untoothed longitudinal profile, and said attachment means releasably holding said syringe by said barrel in a predetermined disposition relative to said housing with said plunger extending transversely to the axes of rotation of said rollers, with said toothed roller in penetrated driving engagement with said plunger profile, and with said further roller in driven engagement with said plunger.

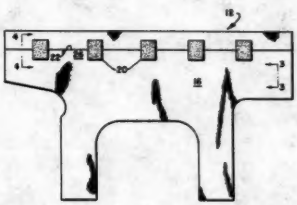
4,620,849

METHODS FOR TOPICALLY APPLYING COMPOSITIONS TO SMALL ANIMALS

Margit Corner, 7758 Orleans St., Miramar, Fla. 33023

Filed Nov. 21, 1984, Ser. No. 674,061
Int. Cl.[4] A61M *35/00*
U.S. Cl. 604—290 2 Claims

1. A sandwichlike coat or blanketlike device in which a small animal can be enveloped, said device being designed to conform to the body of and encompass the bulk of animal and said device comprising: a flexible, porous inner core layer, the pores of said inner core layer being impregnated with a chemical composition which is to be applied to the skin of the small animal; an essentially impervious outer, flexible layer of uniform thickness bonded to said flexible core to keep said impregnated chemical composition from escaping from said core into the ambient surrounding; an equally impervious film bonded to the inner side of the flexible core to similarly keep said impregnated chemical composition from escaping from said core into the ambient surrounding; and means so bonding said film to the inner side of the flexible core that said film can be stripped from and expose said core and allow said small animal to subsequently be enveloped in said coat with said core contacting said animal to thereby accommodate the transfer of said chemical composition to said animal by the manipulation of said coat.



4,620,850

COMPOSITION AND PROCESS FOR THE OXIDATIVE DYEING OF HAIR

Heinrich Bachmann, Giffers, and Plato Portmann, Fribourg, both of Switzerland, assignors to Wella Aktiengesellschaft, Darmstadt, Fed. Rep. of Germany

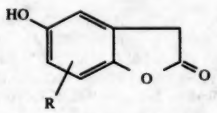
Continuation of Ser. No. 253,509, Apr. 8, 1981, abandoned. This application Aug. 8, 1984, Ser. No. 641,134

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1979, 2939304

Int. Cl.[4] A61K *7/13*

U.S. Cl. 8—406 3 Claims

1. A process for the oxidative dyeing of human hair, comprising the steps of applying an amount sufficient for dyeing the hair of a composition for oxidative dyeing of human hair comprising 0.1 to 5.0% by weight of a compound of the general formula



wherein

R represents H, OH, R′ or OR′, and

R′ represents an alkyl group having 1–5 carbon atoms, and the usual cosmetic additives for hair dyeing, with a pH value of 7.0–8.5 onto the hair, allowing the hair dyeing composition to remain on the hair for approximately 10–20 minutes at a temperature of 20°–40° C., applying an amount sufficient for oxidizing the compound of formula (i) of an approximately 1–8% alkaline solution of hydrogen peroxide or ammonium peroxodisulfate, leaving the solution on the hair for a further 10–20 minutes at the same temperature, and washing the hair with water.

4,620,851

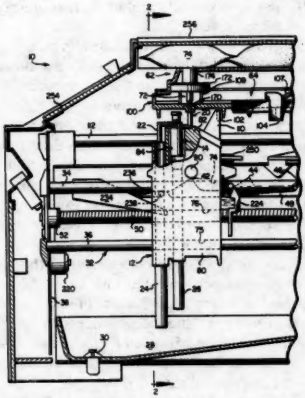
METHOD FOR TINTING SOFT CONTACT LENSES

Francis E. Ryder, and Fred E. Williams, both of Arab, Ala., assignors to Ryder International Corporation, Arab, Ala.

Division of Ser. No. 715,095, Mar. 22, 1985. This application Jan. 28, 1986, Ser. No. 823,378

Int. Cl.[4] D06P *5/02;* B05D *5/06;* B29D *11/00*

U.S. Cl. 8—507 4 Claims



1. A method for tinting soft contact lenses comprising the steps of: mounting said contact lens to a fixture including inlet means and outlet means for directing predetermined fluids therethrough for engagement with predetermined surfaces of said contact lens to tint said lens; mounting said fixture to a carrier in a predetermined orientation; guiding said carrier along a predetermined path of travel; arranging a plurality of fluid application stations along said predetermined path of travel, each fluid application station including fluid release means; and further moving said carrier means as it moves long said path of travel in a direction for aligning the inlet means of the fixture with each of said fluid release means, in sequence, for delivering a quantity of fluid to said inlet means.

4,620,852

GRAINED ARTIFICIAL LEATHER HAVING GOOD COLOR FASTNESS AND DYEING METHOD OF ULTRAFINE POLYAMIDE FIBERS

Toshio Nishikawa, Shiga; Shiro Imai, Otsu; Kenkichi Yagi, Otsu; Yuriko Yoshida, Otsu; Masato Shimada, Otsu; Junnosuke Nagashima, Kusatsu, and Teruo Nakamura, Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Jun. 19, 1984, Ser. No. 622,214

Int. Cl.[4] D06P *5/04*

U.S. Cl. 8—515 11 Claims

1. A process for manufacturing artificial leather, which comprises at least the following steps:

(1) making a fiber sheet mainly comprising ultrafine fibers of not more than 0.2 denier or convertible multi-component fibers for making ultrafine-fibers,

(2) entangling said fiber sheets by applying a high speed water jet to at least one surface thereof,

(3) applying a polyurethane to said surface to which said high speed water jet is applied, wherein at least 5 weight % of the polymeric diol component of the polyurethane is a polyoxyxethylene chain having a molecular weight of 500 to 50,000, and

(4) (i) dyeing said polyurethane applied sheet with metal dye complexes and applying a fixing agent selected from the group consisting of tannins, synthetic tannins and their derivatives, or (ii) dyeing said sheet with reactive dyes.

4,620,853

DYESTUFF MIXTURES, PROCESS FOR THEIR PREPARATION AND PROCESS FOR DYEING AND PRINTING HYDROPHOBIC FIBER MATERIALS

Horst Tappe, Dietzenbach; Klaus Hofmann, Frankfurt am Main; Manfred Hähnke, Kelkheim, and Albert Bode, Schwalbach, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

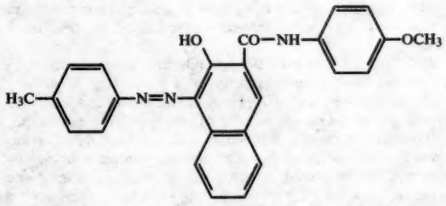
Filed Dec. 9, 1985, Ser. No. 806,448

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1984, 3445930

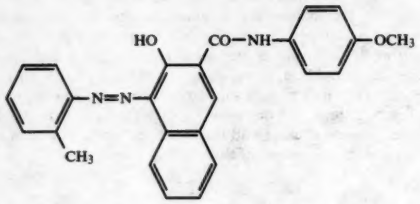
Int. Cl.[4] C09B *67/22, 29/15*

U.S. Cl. 8—639 8 Claims

1. The mixture of monoazo dyestuffs which comprises dyestuffs (A) and dyestuff (B) wherein dyestuff (A) is of the formula



and dyestuff (B) is of the formula



and wherein the weight ratio of dyestuff (A) to dyestuff (B) is about (80 to 60):(20 to 40).

4,620,854

METHOD OF PREPARING INDIUM INGOTS

Daniel Brasen, Lake Hiawatha; Michael A. DiGiuseppe, Succasunna; Jose A. Lourenco, Elizabeth, and Subhash Mahajan, Summit, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 437,472, Oct. 28, 1982, Pat. No. 4,566,934. This application Oct. 21, 1985, Ser. No. 789,727

Int. Cl.[4] H01L *21/306*

U.S. Cl. 23—293 R **4 Claims**

1. A method of preparing In ingots comprising the steps of:
(a) providing an In feed,
(b) etching the feed to remove contaminants from the surface of the feed,
(c) placing the etched feed into the wells of a boat,
(d) heating the feed to a temperature above the melting point of indium in an ambient of flowing gas, thereby resulting in additional contaminants coalescing on the surface of the molten indium,
(e) cooling the molten indium to resolidify it into ingots,
(f) etching the ingots to remove the additional contaminants,
(g) storing the etched ingots for later use.

4,620,855

AMINO SULFONIC ACID DERIVATIVES OF CARBOXYLIC ACID-CONTAINING INTERPOLYMERS, AND FUELS, LUBRICANTS AND AQUEOUS SYSTEMS CONTAINING SAID DERIVATIVES

William A. Higgins, Gates Mills, Ohio, assignor to The Lubrizol Corp., Wickliffe, Ohio

Filed Nov. 7, 1984, Ser. No. 669,175

Int. Cl.[4] C08K *5/01*; C10L *1/24*; C10M *151/04*

U.S. Cl. 44—62 **52 Claims**

1. An additive concentrate for preparing lubricants or normally liquid hydrocarbon fuel compositions comprising a substantially inert, normally liquid organic diluent selected from the group consisting essentially of naphtha, benzene, toluene, xylene, mineral oil and normally liquid fuels and from about 20 to about 90% by weight of an N-acylated amino hydrocarbyl sulfonic acid or acid derivative composition characterized by the presence within the structure of at least one acyl, acylimidoyl or acyloxy group attached to the amino nitrogen, said groups being derived from the carboxylic acid groups contained in an interpolymer of (i) at least one olefin monomer and (ii) at least one alpha, beta-unsaturated acid or derivative thereof.

27. A lubricant or normally liquid hydrocarbon fuel composition containing a major amount of a lubricating oil or normally liquid hydrocarbon fuel and an amount up to about 30% by weight of lubricant or 1 to 50,000 parts by weight per million parts by weight of fuel of at least one N-acylated amino hydrocarbyl sulfonic acid or acid derivative composition characterized by the presence within the structure of at least one acyl, acylimidoyl or acyloxy group attached to the amino nitrogen, said groups being derived from the carboxylic acid groups contained in an interpolymer of (i) at least one olefin monomer and (ii) at least one alpha, beta-unsaturated acid or derivative thereof.

4,620,856

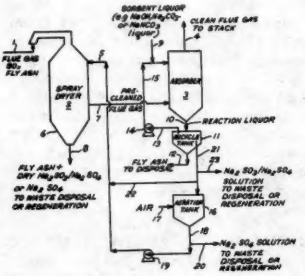
AIR POLLUTION CONTROL PROCESS AND APPARATUS

Harvey S. Rosenberg, Columbus, Ohio, and Joseph M. Genco, Orono, Me., assignors to Industrial Resources, Inc., Lakewood, Colo.

Division of Ser. No. 227,584, Jan. 23, 1981, which is a continuation of Ser. No. 930,296, Jul. 31, 1978, Pat. No. 4,325,713, and Ser. No. 720,814, Sep. 7, 1976, abandoned, which is a continuation of Ser. No. 519,634, Oct. 31, 1974, abandoned. This application Jul. 29, 1981, Ser. No. 287,981

Int. Cl.[4] B01D *53/14*

U.S. Cl. 55—73 **5 Claims**



1. A continuous process for removing pollutants from waste gases which pollutants are present in the gas in the form of acid components, the said process comprising
(a) introducing the waste gas into an evaporator tower where the gas is mixed with an aqueous solution of a salt of said acid component;
(b) heat-vaporizing the resulting mixture in said evaporator so as to form salt crystals from said salt solution and withdrawing said salt crystals from the gas substantially without said pollutants and solids from the gas;
(c) passing the gas through a separation device to remove the formed crystals together with solids initially present in the gas prior to passing the gas to an absorption tower;
(d) then passing the now substantially dry gas including residual salt crystal to said absorption tower, introducing an alkaline absorbent into the tower, the absorbent being a liquid or forming a liquid in the tower and being adapted to form salts with said acid component of the gas in the form of an aqueous concentrated solution of the salt and to dissolve residual salt crystals present in said gas and introducing fresh water to the extent necessary to form and maintain the liquid absorbent and aqueous salt solution;
(e) continuously circulating the formed salt solution out of and into the absorption tower;
(f) while continuously withdrawing a controlled amount of said salt solution and recycling said amount into the evaporator tower for said gas-solids separation step and
(g) discharging the pollutants-free gas from the absorption tower.

4,620,857

METHOD FOR A CONTROLLED CHANGE OF THE PORE SIZE IN SOLIDS

Etienne Vansant, Zoersel; Paul De Bievre, Kasterlee; Guido J. Peeters, Berchem; Anita Thijs, Heusden-Zolder, and Ingrid Verhaert, Zichem, all of Belgium, assignors to European Atomic Energy Community (Euratom), Plateau du Kirchberg, Luxembourg

Filed Oct. 18, 1984, Ser. No. 662,223

Claims priority, application European Pat. Off., Oct. 21, 1983, 83201516.8

Int. Cl.[4] B01D *53/04*

U.S. Cl. 55—75 **9 Claims**

1. A method for reducing the pore size of a porous solid, comprising the following steps:

heating said solid to produce a degassed material;

treating said degassed material with one of reagents x and y, where:

x is diborane; and

y is a volatile compound of nitrogen or phosphorous capable of reacting chemically with diborane;

treating said degassed material with the other of said reagents x and y; and causing reagents x and y to react to form a deposit at the entrances of the pores, resulting in a modified porous solid having pore entrances of a size smaller than the pore entrances of the original porous solid.

4,620,858

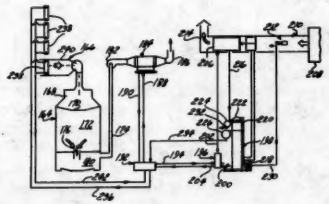
PROCESS AND SYSTEM FOR ELIMINATION OF PAINT SOLVENT VAPORS

Norman F. Bradshaw, Surrey, and Ivan Bloomer, London, both of Great Britain, assignors to Haden Schweitzer Corporation, Madison Heights, Mich.

Division of Ser. No. 524,640, Aug. 19, 1983, abandoned, which is a division of Ser. No. 330,744, Dec. 14, 1981, abandoned, which is a continuation-in-part of Ser. No. 235,270, Feb. 17, 1981, abandoned, which is a continuation-in-part of Ser. No. 74,647, Sep. 12, 1979, Pat. No. 4,261,767. This application Nov. 19, 1984, Ser. No. 672,835

Int. Cl.[4] B01D *46/02, 53/14*

U.S. Cl. 55—222 **6 Claims**



1. An air handling system for a paint applying enclosure wherein organic solvent base paint application processes are conducted, said air handling system comprising:

air inlet supply means for introducing a flow of fresh air into said enclosure;

air exhaust means for causing an exhaust air flow from said enclosure, said exhaust means including paint solid removal means for removing paint solids from said exhaust air flow to provide filtered exhaust air;

solvent vapor removal means for removing organic solvents from said filtered exhaust air, including a chamber for receipt of the filtered exhaust air, a source of an organic solvent absorbing liquid having an affinity for said organic solvents, means for supplying said organic solvent absorber liquid to said chamber and means for producing contact between said organic solvent absorbing liquid and the filtered exhaust air to absorb the organic solvents in said air;

regenerator means coupled with said solvent removal means for removing absorbed organics from said absorber liquid to regenerate said absorber liquid, including means for heating said absorber liquid to vaporize the absorbed organic solvents; and

means coupled with said regenerator means for recirculating regenerated absorber liquid to said solvent removal means.

4,620,859

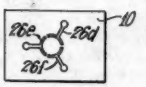
METHOD FOR MAKING COALESCED MINERAL FIBERS

David C. K. Lin, Newark; Larry J. Huey, Granville, and Farrokh Kaveh, Dublin, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 677,664, Dec. 3, 1984, abandoned. This application Feb. 14, 1986, Ser. No. 830,391

Int. Cl.[4] C03B *37/022*

U.S. Cl. 65—2 **6 Claims**



1. The method of making mineral fibers having a mod ratio greater than about 1.2 comprising discharging molten mineral material having a liquidus greater than about 1200° F. (649° C.) as primary molten streams from orifices positioned in the wall of a container for holding a body of molten mineral material, joining at least one primary stream to an adjacent primary stream to form a hollow coalesced molten stream of different cross-sectional shape from that of the orifices, the mineral material in said coalesced stream having a low enough initial viscosity that said stream would assume a circular cross-section in the absence of quenching, and quenching the hollow coalesced stream to harden it into a hollow mineral fiber having a cross-sectional shape similar to the shape of the coalesced stream.

4,620,860

PROCESS FOR MAKING GLASS FIBER PRODUCTS AND PRODUCT PRODUCED

Kenneth D. Werbowy, Islington, Canada, assignor to Manville Corporation, Denver, Colo.

Filed Jul. 23, 1985, Ser. No. 758,177

Int. Cl.[4] C03C *25/02;* **C03B** *37/06*

U.S. Cl. 65—3.4 **7 Claims**

1. A process for the production of glass fiber products comprising the steps of:

(a) combining glass fibers with a heat curable binder composition;

(b) consolidating the glass fibers and heat curable binder onto a conveyor;

(c) placing a cured glass fiber mass having a uniform thickness in the range of about 10–20 mils onto the surface of the thus consolidated mass of fibers and heat curable binder;

(d) conveying the resulting product of (c) above to a curing means;

(e) curing the resulting product of (d) at a temperature in the range of about 500°–550° F. for about 1–6 minutes;

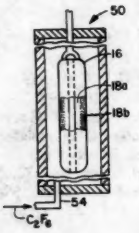
(f) conveying the product of (e) to a knife coating means; and

(g) thereafter applying a paint coating to the surface of the resulting product of (e).

4,620,861
METHOD FOR MAKING INDEX-PROFILED OPTICAL DEVICE

George E. Berkey, Pine City, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Nov. 4, 1985, Ser. No. 794,833
Int. Cl.[4] C03C *25/02;* C03B *37/023*
U.S. Cl. 65—3.12 14 Claims



2. A method of providing a cylindrical glass preform having a stepped and/or graded refractive index profile across its diameter which comprises the steps of:

(a) forming a cylindrical porous soot preform comprising SiO_2 and at least one codeposited dopant selected from the group of dopants effective to reduce the softening temperature of SiO_2 when combined therewith in a glass, said codeposited dopant being introduced in a varying concentration to provide a stepped and/or graded dopant concentration profile across the radius of said preform, the preform thus comprising zones of relatively high dopant concentration and zones of relatively low dopant concentration;

(b) heating the porous soot preform for selective sintering at a temperature below the sintering temperature of undoped fused silica but above a temperature effective to at least partially sinter at least one domain of relatively high dopant concentration in said preform, the resulting preform comprising a stepped and/or graded density profile across the preform radius comprising domains of relatively low internal surface area and domains of relatively high internal surface area;

(c) exposing the cylindrical preform to an atmosphere comprising a vaporized second dopant, said exposure being for a time sufficient to permit internal absorption of the second dopant by the preform, said absorption being higher in domains of relatively high internal surface area within the preform than in domains of relatively low internal surface area; and

(d) heating the cylindrical porous soot preform to consolidate it to a clear glass preform having a stepped and/or graded refractive index profile across its diameter.

4,620,862
PROCESS OF FABRICATING AN ELONGATED GLASS BODY PARTICULARLY A PREFORM FOR OPTICAL WAVEGUIDES

Raimund Dorn, Schwieberdingen, and Armin Baumgartner, Ludwigsburg, both of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

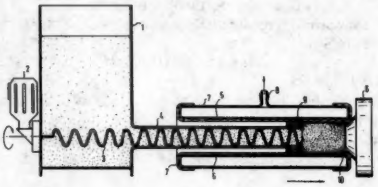
Filed Feb. 21, 1985, Ser. No. 703,793
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1984, 3406475
Int. Cl.[4] C03B *19/06*
U.S. Cl. 65—18.1 18 Claims

1. A method of making a glass preform, the method comprising:

providing an elongated, hollow mold member having a flexible sidewall, one open end and a closed end opposite thereto;

applying a longitudinal force against the closure at said closed end so that the force acts upon the closure and upon the mold member in the direction of the open end;

then filling said mold member by forcing glass forming pulverulent material into said open end so that the increase in mass of material resulting from said filling causes said pulverulent material to act against said closed end in



opposition to said longitudinal force and thereby moves said mold member against said longitudinal force;

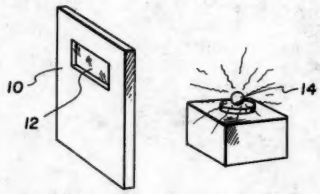
discontinuing the filling step and closing the open end of said mold member; and

forming a glass preform by comprising said material in said mold member to form a porous body and sintering to form said glass preform.

4,620,863
RADIATION COLORATION RESISTANT GLASS

Minoru Tomozawa; E. Bruce Watson, and John Acocella, all of Troy, N.Y., assignors to Rensselaer Polytechnic Institute, Troy, N.Y.

Continuation of Ser. No. 279,701, Jul. 2, 1981, abandoned. This application Oct. 14, 1983, Ser. No. 542,219
Int. Cl.[4] C03C *23/00*
U.S. Cl. 65—30.12 1 Claim



1. A method of resisting coloration of transparent glass and maintaining its transparency in a radiation environment comprising:

providing a cerium oxide free transparent $Na_2O.3SiO_2$ glass having a material content and composition including between about 0.5% and 12.0% by weight water;

positioning the glass in an environment of gamma radiation sufficient to supply a dosage of 10^5 rad; and

irradiating the glass so that it receives a dosage of the radiation of about 10^5 rad by maintaining the glass in the environment of radiation with the glass undergoing substantially no color change upon irradiation and remaining substantially transparent, where the glass would undergo coloration if the 0.5% to 12.0% water were not present.

4,620,864

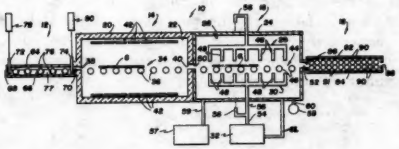
GLASS SHEET TEMPERING UTILIZING HEATING AND QUENCHING PERFORMED IN AMBIENT AT SUPERATMOSPHERIC PRESSURE

Harold A. McMaster, Woodville, Ohio, assignor to Glasstech, Inc., Perrysburg, Ohio

Continuation-in-part of Ser. No. 633,637, Jul. 23, 1984, abandoned. This application Jul. 15, 1985, Ser. No. 754,572

Int. Cl.[4] C03B *27/04*

U.S. Cl. 65—114 **14 Claims**



1. A glass sheet tempering system comprising: a furnace including an enclosed pressurized heating chamber in which glass sheets are heated to a sufficiently high temperature for tempering in an ambient at superatmospheric pressure; a quench unit including an enclosed pressurized quenching chamber in an ambient at superatmospheric pressure and having opposed blastheads for impinging quenching gas on a heated glass sheet received therebetween from the heating chamber so as to temper the glass sheet; means for communicating the heating chamber and the quenching chamber so that said superatmospheric pressures are maintained within their respective chambers during glass sheet transfer therebetween; and an exit station in communication with said quenching chamber for receiving a glass sheet tempered within the quenching chamber and means for maintaining the superatmospheric pressure within the quenching chamber during glass sheet transfer therebetween.

8. A method for tempering a glass sheet comprising: heating the glass sheet within an enclosed heating chamber that is pressurized with an ambient at superatmospheric pressure; transferring the heated glass sheet to an enclosed quenching chamber that is pressurized with an ambient at superatmospheric pressure; communicating the heating and quenching chambers so that the superatmospheric pressures are maintained during the step of transferring; quenching the heated glass sheet within the quenching chamber to provide tempering of the glass sheet; transferring the tempered glass sheet out of the quenching chamber and to an exit station; and maintaining the superatmospheric pressure in the quenching chamber during the step of transferring the tempered glass sheet.

4,620,865

HERBICIDAL AND ALGICIDAL 1,5-DISUBSTITUTED-1H-PYRAZOLE-4-CARBOXAMIDES

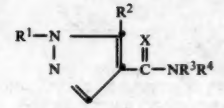
James R. Beck, Indianapolis, and Michael P. Lynch, Greenfield, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 650,136, Sep. 13, 1984, abandoned, which is a continuation-in-part of Ser. No. 549,122, Nov. 7, 1983, abandoned. This application Feb. 24, 1986, Ser. No. 833,309

Int. Cl.[4] A01N *43/56*; C07D *231/18, 401/04*

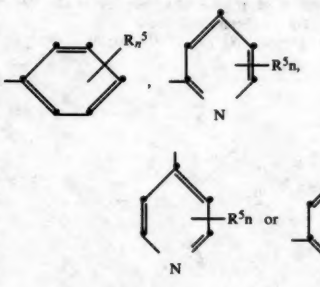
U.S. Cl. 71—67 **48 Claims**

1. A compound of the formula



wherein

R^1 is tert-butyl, C_5–C_6 cycloalkyl,



R^2 is halogen, C_1–C_4 alkyl, trifluoromethyl, C_1–C_4 alkylthio or C_1–C_4 alkylsulfonyl;

R^3 is hydrogen, C_1–C_4 alkyl or C_1–C_4 alkoxy;

R^4 is cyclopropyl, C_1–C_4 alkyl or C_1–C_4 alkoxy;

R^5 is halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkyl, C_1–C_4 haloalkoxy or nitro;

X is O or S; and

n is 0–3;

with the following provisos: the combined total of carbon atoms for R^3 and R^4 does not exceed 5; when R^1 is phenyl, R^5 is C_1–C_4 alkyl, and R^2 is halogen, alkoxy, alkylthio, or alkylsulfonyl, the R^5 substituent exists at other than the 2 or 6 position of the phenyl ring; when R^3 is C_1–C_4 alkoxy, R^4 is other than C_1–C_4 alkoxy; and when R^1 is phenyl, R^5 is C_1–C_4 alkoxy and R^2 is other than bromine, the R^5 substituent exists at other than the 3 or 5 position of the phenyl ring.

14. A method for controlling undesired plants which comprises applying to the plants a growth inhibiting amount of a compound of claim **1**.

27. A method for controlling the growth of aquatic algae which comprises applying to the water containing said algae a growth inhibiting amount of a compound of claim **1**.

4,620,866

2-AZETIDINEACETIC ACID AND CERTAIN OF ITS CONGENERS

Alexander F. Orr, Teynham, Nr. Sittingbourne, United Kingdom, assignor to Shell Oil Company, Houston, Tex.

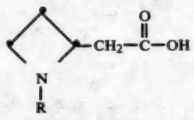
Continuation-in-part of Ser. No. 571,403, Jan. 17, 1984, abandoned. This application Aug. 13, 1984, Ser. No. 639,986

Claims priority, application United Kingdom, Jan. 21, 1983, 8301702

Int. Cl.[4] A01N *43/44*; C07D *205/04*

U.S. Cl. 71—88 **9 Claims**

1. A compound of the formula:



wherein R is hydrogen, acyl —C(O)R^1, wherein R^1 is hydro-

gen, straight-chain or branched-chain alkyl of from one to four carbon atoms, phenyl or benzyl.

4,620,867

1-CARBALKOXYALKYL-3-ARYLOXY-4-(SUBSTITUTED-2'-CARBOXYPHENYL)-AZET-2-ONES AS PLANT GROWTH REGULATORS AND HERBICIDES

Tatao Luo, El Sobrante, Calif., assignor to Chevron Research Company, San Francisco, Calif.

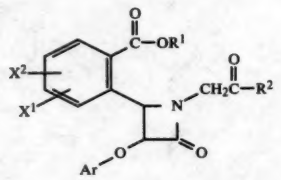
Filed Sep. 28, 1984, Ser. No. 656,068

The portion of the term of this patent subsequent to Oct. 30, 2001, has been disclaimed.

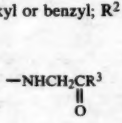
Int. Cl.[4] C07D *205/08, 263/12, 263/14;* A01N *43/44*

U.S. Cl. 71—88 **33 Claims**

1. A compound of the formula:



wherein R^1 is lower alkyl or benzyl; R^2 is lower alkoxy, benzyloxy or the group



where R^3 is lower alkoxy; Ar is phenyl or phenyl substituted with 1 to 3 substituents independently selected from halogen, trihalomethyl, nitro, phenyl, lower alkoxy and lower alkyl; and X^1 and X^2 are independently hydrogen, halogen, lower alkoxy, or lower alkyl, or X^1 and X^2 taken together form an aromatic ring fused with the phenyl ring, provided that both X^1 and X^2 are not hydrogen.

22. A plant growth regulating composition comprising a biologically inert carrier and a plant growth regulating effective amount of a compound of claim **1**.

4,620,868

N-[(4,6-DIMETHOXYPYRIMIDIN-2-YL)AMINOCARBONYL]-3[HALO-SUBSTITUTED ETHENYL (OR PROPENYL)]-2-THIOPHENESULFONAMIDES USEFUL AS HERBICIDES

Fumio Kimura; Takahiro Haga; Kazuyuki Maeda; Kouji Hayashi; Toshio Seki, and Tsunezo Yoshida, all of Shiga, Japan, assignors to Ishihara Sangyo Kaisha, Ltd., Osaka, Japan

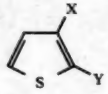
Filed Dec. 18, 1984, Ser. No. 683,219

Claims priority, application Japan, Dec. 27, 1983, 58-247518; Mar. 15, 1984, 59-50092; Mar. 16, 1984, 59-51582

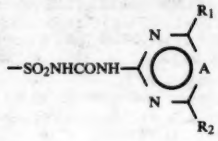
Int. Cl.[4] A01N *43/02;* C07D *239/02*

U.S. Cl. 71—90 **12 Claims**

1. A thiophenesulfonamide compound of the formula:



wherein either one of X and Y is an ethenyl or propenyl group having all hydrogen atoms replaced by chlorine atoms and/or fluorine atoms, and the other is group



(wherein R_1 and R_2 are each a methyl or methoxy group, and A is =CH—) or agriculturally suitable salt thereof.

9. A herbicidal composition comprising a herbicidally effective amount of the thiophenesulfonamide compound or an agriculturally suitable salt thereof as recited in claim **1** and an agriculturally acceptable adjuvant.

4,620,869

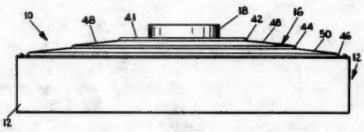
CLEAN ROOM HEAD ASSEMBLY

Harry J. Goossens, Grandville, Mich., and Frederic E. Kamper, Redlands, Calif., assignors to Clean Rooms International, Grand Rapids, Mich.

Filed Feb. 4, 1985, Ser. No. 698,107

Int. Cl.[4] B01D *46/00*

U.S. Cl. 55—385 A **15 Claims**



1. In a vertical-flow air diffuser plenum assembly having:

a generally rectangular hood formed of a unitary piece of sheet material in a generally pyramidal rectangular shape and including an air supply opening at an apex thereof and an open bottom;

means for connecting a source of air supply to said air supply opening in said hood;

a deflector mounted in said hood beneath said air supply opening to at least partially deflect air entering said hood through said air supply opening in a lateral direction along the inside surface of said hood;

a rectangular filter medium;

means for mounting said rectangular filter medium beneath the said open bottom of said hood and in generally airflow relationship therewith so that air entering said air supply opening passes through said filter medium;

the improvement in said hood which comprises:

the hood apex is formed by a substantially horizontal wall; and

a plurality of smooth continuous horizontal, generally rectangular ridges extending 360 degrees around said hood between said apex and said bottom opening thereof, said ridges being spaced between the apex and bottom of said hood and shaped so as to deflect air flowing along said hood inside surface downwardly through said filter medium in a substantially uniform flow pattern thereacross.

4,620,870

PHENYL-SUBSTITUTED SULFONAMIDES

Robert J. Pasteris, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 533,341, Sep. 20, 1983, Pat. No. 4,586,950, and a continuation-in-part of Ser. No. 499,443, May 31, 1983, abandoned, which is a continuation-in-part of Ser. No. 437,632, Oct. 29, 1982, abandoned. This application Mar. 7, 1985, Ser. No. 709,340

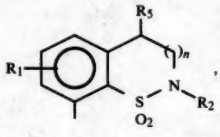
Int. Cl.[4] A01N *43/70*; C07D *401/12, 411/12, 405/12*

U.S. Cl. 71—91 50 Claims

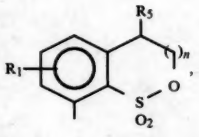
1. A compound of formula:

wherein

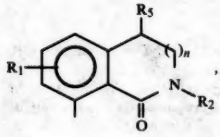
J is



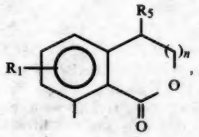
J_1



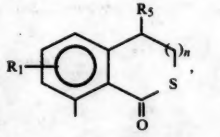
J_2



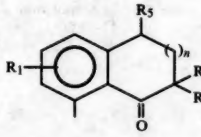
J_3



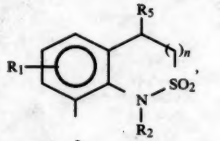
J_4



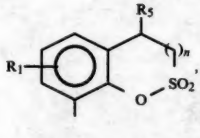
J_5



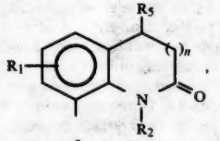
J_6



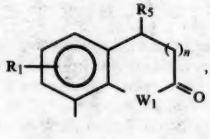
J_7



J_8



J_9



J_{10}

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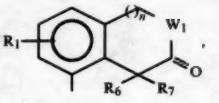

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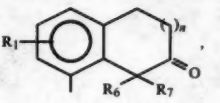

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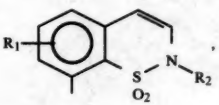
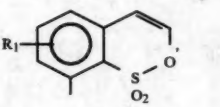
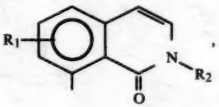


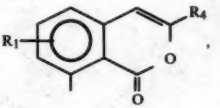
J_{13}



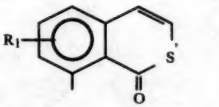
J_{14}



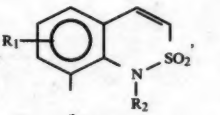
J_{15}



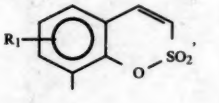
J_{16}



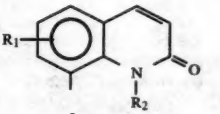
J_{17}



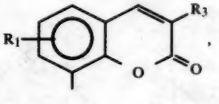
J_{18}



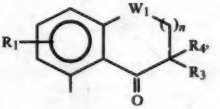
J_{19}



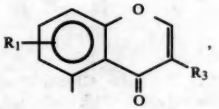
J_{20}



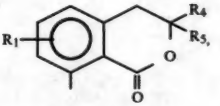
J_{21}



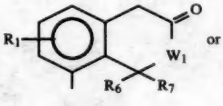
J_{22}



J_{23}

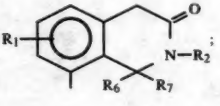


J_{24}



J_{25}

or



J_{26}

n is 0, 1 or 2;

W is O or S;

W_1 is O or S;

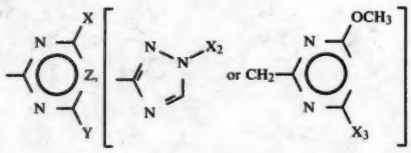
R is H or CH_3;

R_1 is H, F, Cl, Br, CH_3, OCH_3, CF_3, SCH_3 or OCF_2H;

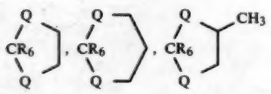
R_2 is H or C_1–C_4 alkyl;

R_3 and R_4 are independently H, C_1–C_4 alkyl, Cl or Br;

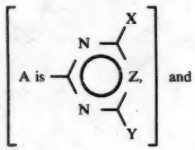
R_5 is H or CH_3;
R_6 is H or CH_3;
$R_7$is H or CH_3;
A is



X is CH_3, OCH_3, OCH_2CH_3, OCF_2H, CH_2F or CF_3;
Y is H, CH_3, OCH_3, OC_2H_5, CH_2OCH_3, NH_2, $NHCH_3$, $N(CH_3)_2$, C_2H_5, CF_3, SCH_3, $OCH_2CH{=}CH_2$, $OCH_2C{\equiv}CH$, OCH_2CF_3, CN, N_3, $OCH_2CH_2OCH_3$, CH_2SCH_3, $CR_6(QCH_3)_2$,



$CR_6(QCH_2CH_3)_2$ or QCF_2T where Q is O or S and T is H, CHClF, CHBrF, or $CHFCF_3$;
Z is N;
provided that
(a) when W is S, then R is H,



and
Y is CH_3, OCH_3, OC_2H_5, CH_2OCH_3, C_2H_5, CF_3, SCH_3, $OCH_2CH{=}CH_2$, $OCH_2CH{\equiv}CH$, OCH_2CF_3, $OCH_2CH_2OCH_3$, $CH(OCH_3)_2$ or

(b) the total number of carbon atoms in R_3 and R_4 is less than or equal to 4;
(c) when R_5 is CH_3, then n is O;
(d) when J is J_{24}, then R_4 and R_5 are not both H and R_4 is not Cl or Br;
and their agriculturally suitable salts.

4,620,871

COMPOSITION FOR INCREASING PLANT PRODUCTIVITY PROTEIN NITROGEN LEVEL AND ANION UPTAKE, POSSESSING KINETIN-SUPPLEMENTING, CYTOKININ-LIKE AND MEMBRANE ACTIVITIES

Erzsébet Grega née Tóth; Enikö Koppány; Tibor Bódi; József Nagy; Zsolt Dombay, all of Miskolc; Tibor Szarvas, Budapest; László Horváth, Budapest; Ildikó Szabó née Murányi, Budapest; József Márton, Budapest; Béla Pozsár, Jr., Budapest; Sándor Virányi, Budapest; Peter Simon, Budapest; József Keserü, Budapest, and József Eifert, Budapest, all of Hungary, assignors to Eszakmagyarorszagivegyimuvek, Gyartelep, Hungary

Filed Sep. 11, 1981, Ser. No. 301,822
Claims priority, application Hungary, Sep. 12, 1980, 2237/80
Int. Cl.[4] A01N *43/52, 43/58*
U.S. Cl. 71—92 **6 Claims**

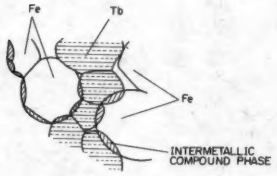
1. An agricultural method for increasing the crop yield of a cultivated plant and for improving the quality thereof which comprises the step of treating the cultivated plant, its seeds or its surroundings, with an effective amount of a composition which contains 0.5 to 70% by weight of a mixture of 1,4-dihydroxy-phthalazine-diguanidine and N-(n-propyl)-benzimidazolium bromide together with 30 to 80% by weight of an inert liquid diluent, 1 to 20% by weight of a solid inert carrier, and 1 to 15% by weight of a surfactant.

4,620,872

COMPOSITE TARGET MATERIAL AND PROCESS FOR PRODUCING THE SAME

Kenichi Hijikata, Urawa; Katsuyuki Sato, Ohmiya; Hitoshi Maruyama, Kuki, and Ryoko Furuhashi, Kumagaya, all of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 15, 1985, Ser. No. 787,529
Claims priority, application Japan, Oct. 18, 1984, 59-219227; Nov. 16, 1984, 59-241831
Int. Cl.[4] C22C *19/07, 38/00*; B22F *3/00*
U.S. Cl. 75—246 **2 Claims**



2. In a sintered composite target material that consists of 30–50 wt % of at least one rare earth metal selected from the group consisting of Tb, Gd, Dy, Ho, Tm, Er and alloys thereof, and the balance being composed of at least one transition metal selected from the group consisting of Fe, Co, Ni and alloys thereof, and incidental impurities, the improvement wherein said target material has such a structure that an intermetallic compound phase is present at the interface between the particles of a rare earth metal and those of a transition metal.

4,620,873

ZINC-BASED PAINTS EMPLOYING A MIXTURE OF ETHER ALCOHOLS AS LIQUID ORGANIC VEHICLE

Edward W. Orr, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 745,454, Jun. 14, 1985. This application Sep. 23, 1985, Ser. No. 778,957

Int. Cl.[4] C09D 5/08

U.S. Cl. 106—1.17 **36 Claims**

1. A zinc-based paint formulation comprising:

(a) an amount of a zinc-containing particulate solid which is sufficient to increase the corrosion protection capacity of the paint;

(b) an amount of a binder which is sufficient to bind the paint to a corrodible substrate when the substrate is protectively coated with the paint; and

(c) an amount of a liquid organic vehicle which is sufficient to disperse the particulate solids, said vehicle containing a mixture comprising:

(1) a first ether alcohol represented by the formula R—O—R^1—OH in which R is an alkyl moiety and R^1 is an alkylene moiety, and

(2) a second ether alcohol represented by the formula R^2—O—R^3—OH, in which R^2 is an alkyl moiety and R^3 is an alkylene moiety,

said second ether alcohol being different from said first ether alcohol, in which the mixture comprises the first and second ether alcohols in a proportion sufficient to improve the corrosion resistance capacity of the paint compared to a paint using a solvent consisting of either one of the two ether alcohols.

4,620,874

METAL MODIFIED PHENOLIC RESIN COLOR DEVELOPERS

William O. Booth, Jr., Tuscaloosa, Ala.; Thomas M. Galkiewicz, South Plainfield, N.J., and Stanley L. Forehand, Tuscaloosa, Ala., assignors to BTL Specialty Resins Corporation, Warren, N.J.

Filed Jun. 28, 1984, Ser. No. 625,508

Int. Cl.[4] C09D 11/00

U.S. Cl. 106—21 **20 Claims**

1. A method for producing a carbonless copying color developer consisting essentially of a theremoplastic chelated metal modified phenolic resin, said method consisting essentially of:

(a) forming a mixture of a para-substituted phenol, salicylic acid and metal oxide, wherein the mole ratio of salicylic acid to para-substituted phenol varies from about 0.05-1.5:1, respectively, and wherein the amount of metal oxide varies from about 1 to 10%, by weight of the combined salicylic acid and para-substituted phenol;

(b) heating said mixture at atmospheric pressure to its refluxing temperature;

(c) reacting said heated mixture with formaldehyde, in an inert atmosphere, and under hydrous conditions, to thereby form said thermoplastic chelated metal modified resin in an insitu, one-step reaction, wherein the mole ratio of formaldehyde to the combination of salicylic acid and para-substituted phenol varies from about 0.1-1.0:1, respectively, and wherein there is substantially no unreacted metal oxide residue.

4,620,875

AQUEOUS INK COMPOSITION

Masaru Shimada, Shizuoka, and Masaomi Sasaki, Susono, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 3, 1985, Ser. No. 719,451

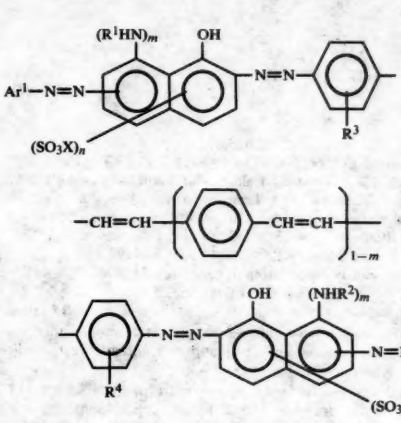
Claims priority, application Japan, Apr. 10, 1984, 59-70135; Apr. 10, 1984, 59-70139

Int. Cl.[4] C09D 11/02

U.S. Cl. 106—22 **5 Claims**

1. An aqueous ink composition comprising:

(1) 0.5 to 30 parts by weight of a dye having the formula



(I)

wherein

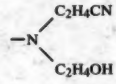
R^1 and R^2 each represent hydrogen, an alkyl group, a phenyl group, an acyl group, an acetyl group or a phenylsulfonyl group,

R^3 and R^4 each represent hydrogen, an alkyl group, an alkoxy group, halogen, a sulfonic acid group,

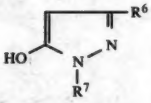
X represents hydrogen, Na, K, Li or an organic amine cation,

m is an integer of 0 or 1; and

when m is an integer of 0, n is an integer of 1 and Ar^1 and Ar^2 each represent a substituted phenyl group, a substituted naphthyl group, wherein the substituents on said phenyl or naphthyl groups are one or more selected from the group consisting of amino, —$N(C_2H_4OH)_2$,

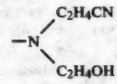


—SO_3Na, hydroxyl, —COOH, nitro, chloro, and methyl,



wherein R^6 represents an alkyl group, a phenyl group, a substituted phenyl group, a cyano group, an alkoxy group, a carboxyl group or a carbamoyl group, and R^7 represents a substituted phenyl group or a substituted naphthyl group, and

when m is an integer of 1, n is an integer of 1 or 2, and Ar^1 and Ar^2 each represent an unsubstituted or substituted phenyl group or naphthyl group wherein the substituents on said phenyl or naphthyl groups are one or more selected from the group consisting of amino, —$N(C_2H_4OH)_2$,



—SO_3Na, hydroxyl, —COOH, nitro, chloro, and methyl;

(2) 5 to 30 parts by weight of a humectant; and

(3) water.

4,620,876

AQUEOUS INK FOR INK-JET PRINTING

Tadashi Fujii, Yokohama; Kakuji Murakami, Kawasaki; Eiichi Akutsu, Ichikawa, and Tamotsu Aruga, Kamakura, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 518,513, Jul. 29, 1983, abandoned. This application Oct. 24, 1985, Ser. No. 790,648

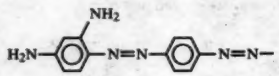
Claims priority, application Japan, Aug. 23, 1982, 57-144608

Int. Cl.[4] C09D *11/02*

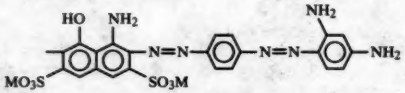
U.S. Cl. 106—22 8 Claims

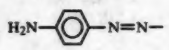
1. An aqueous ink for ink-jet printing comprising an aqueous solution of a water-soluble dye and a water-soluble organic solvent, wherein

(1) said water-soluble dye is a mixture of (a) a compound having the formula I and (b) a compound having the formula II, a compound having the formula III or a mixture of compounds having the formulas II and III

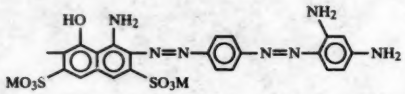


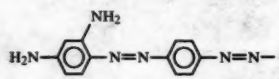
(I)



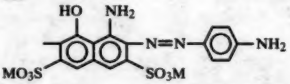


(II)





(III)



wherein M is an alkali metal; the peak ratio of (a)/(b) of said water-soluble dye, measured by liquid chromatography, is in the range of 0.9 to 3.0, the total concentration of NaCl and Na_2SO_4 contained in said water-soluble dye is 3.0 wt. % or less; and the concentration of Ca contained in said water-soluble dye is 120 ppm or less;

(2) said water-soluble organic solvent is a mixture consisting essentially of (c) glycerin and (d) at least one glycol selected from the group consisting of ethylene glycol, diethylene glycol, triethylene glycol, tetraethylene glycol and plyethylene glycol having an average molecular weight in the range of from 200 to 400, the weight ratio of (c):(d) being in the range of 1:1 to 1:5, and the concentration of said water-soluble organic solvent in said aqueous ink is in the range of from 10 wt. % to 30 wt. %; and

(3) the surface tension of said aqueous ink at least 50 dynes/cm.

4,620,877

UPC SCANNABLE MARKING COMPOSITION AND APPLICATIONS THEREOF

William T. Skukowski, Palmetto, Fla., assignor to Tropicana Products, Inc., Bradenton, Fla.

Division of Ser. No. 578,505, Feb. 9, 1984, Pat. No. 4,513,027, which is a division of Ser. No. 335,400, Dec. 29, 1981, Pat. No. 4,431,693. This application Feb. 4, 1985, Ser. No. 697,917

Int. Cl.[4] C09D *11/00*

U.S. Cl. 106—23 7 Claims

1. A colored marking composition containing a colored pigment which by itself exhibits insufficient processable reflectance in the visible and infrared region of from about 600 to about 1000 nm to make the composition suitable for use as the reflective portion of a code symbol to be processed by a code indicia scanning system, said composition comprising said colored pigment, which substantially does not reflect in the range of from about 600 to 1000 nm, and a white pigment which reflects in said visible and infrared region, with said pigments being present in amounts sufficient to provide said composition with a reflectance in said visible and infrared region suitable for processing by code indicia scanning apparatus when used to imprint indicia on a relatively low reflective substrate in a negative mode, the voids between the indicia comprising the low reflective portion of the symbol, to thereby provide a code symbol processable by code indicia scanning apparatus.

4,620,878

METHOD OF PREPARING POLYORGANOSILOXANE EMULSIONS HAVING SMALL PARTICLE SIZE

Ronald P. Gee, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Oct. 17, 1983, Ser. No. 542,639

Int. Cl.[4] C11D *1/82*

U.S. Cl. 106—287.15 97 Claims

1. A process for preparing a polyorganosiloxane emulsion of the oil-in-water type, said process comprising

(A) forming a translucent oil concentrate by

(1) mixing a polyorganosiloxane with at least one surfactant where said polyorganosiloxane contains at least one polar radical attached to silicon through Si—C or Si—O—C bonds or at least one silanol radical where said polyorganosiloxane is liquid at the temperature of mixing, and where at least one of said surfactants is insoluble in said polyorganosiloxane at the temperature of mixing; and

(2) adding water to the polyorganosiloxane and surfactant mixture of step (1) where water is added in an amount sufficient to produce a translucent oil concentrate; and

(B) forming a polyorganosiloxane emulsion of the oil-in-water by rapidly dispersing said translucent oil concentrate in water where the average particle size of said polyorganosiloxane in said emulsion is less than 0.14 micron.

4,620,879

IRON OXIDE YELLOW PIGMENTS HAVING A LOW SILKING EFFECT AND A PROCESS FOR PRODUCTION THEREOF

Wilfried Burow; Helmut Printzen; Horst Brünn, and Klaüs Nollen, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 11, 1984, Ser. No. 629,654

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1983, 3326632

Int. Cl.[4] C09C *1/62*

U.S. Cl. 106—304 11 Claims

1. Iron oxide yellow pigments having a silking effect of 0.5 or less and having color values which have CIELAB units in the range of from 52 to 63 for L*, from 8 to 14 for a* and from 40 to 48 for b*, measured according to German Industrial

Standard 6174 at a 10% pigment volume concentration (PVC) in a medium oil-length alkyd resin having an oil content of

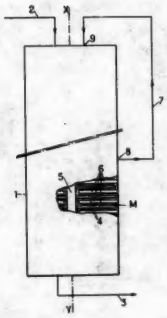
48% based on natural fatty acids and having a density of 0.94 g/cm^3 and dry residue of 44% (trade product of BAYER AG).

4,620,880

PROCESS FOR PRODUCING CRYSTALLINE DEXTROSE MONOHYDRATE

Gilbert Bodele, Hazebrouck; Pierrick Duflot; Bernard Valentin, both of La Gorgue, and Michel Huchette, Merville, all of France, assignors to Roquette Freres, France

Filed Nov. 13, 1984, Ser. No. 670,489
Claims priority, application France, Nov. 17, 1983, 83 18318
Int. Cl.[4] C13F *1/02*
U.S. Cl. 127—60 9 Claims



1. Process for the production of crystalline dextrose monohydrate which comprises

supplying to a vertical or inclined crystallization zone in the vicinity of its top or upper end, glucose syrup having a glucose richness higher than 60% and dry matter content above 55%, establishing a temperature gradient globally decreasing from the top to the bottom or lower end of said zone, seeding said glucose syrup with dextrose crystals, allowing said mixture of glucose syrup and dextrose seed crystals which constitutes a crystallization product to traverse said crystallization zone from the top to the bottom under malaxation, its richness in dextrose monohydrate crystals increasing during the passage from the top to the bottom of the crystallization zone,

extracting, continuously, in the vicinity of the lower end of the crystallization zone, a crystallization product highly enriched in dextrose monohydrate crystals from which said crystals are recovered, and

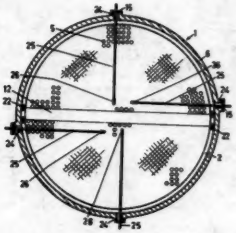
recycling to the upper end of said crystallization zone from an intermediate level spaced from the ends of said zone by at least two-fifths of its total length, an amount of crystallization product representing by volume from 10 to 40% of the amount of the glucose syrup supplied to the top of the crystallization zone.

4,620,881

METHOD FOR CLEANING A STEAM GENERATOR

Johannes Booij, Rhoon, Netherlands, assignor to Innus Industrial Nuclear Services S.A., Geneva, Switzerland

Filed May 14, 1984, Ser. No. 609,802
Claims priority, application Belgium, Aug. 26, 1983, 2/60192(897603); Apr. 5, 1984, 2/60384
Int. Cl.[4] B08B *5/04*
U.S. Cl. 134—21 17 Claims



1. A method for cleaning a steam generator of the so-called U-type which includes an upstanding outer casing; a pipe bundle in the shape of a U mounted in the casing, the pipe bundle having an upward-extending bundle portion and a downward extending bundle portion with a space between the two portions, each bundle portion comprising a number of spaced rows of pipes; a bottom at the foot of the pipe bundle which closes the openings between the pipes and between the pipes and the outer casing; at least two accesses through the outer casing at substantially opposite sides thereof, the accesses lying above the bottom and providing access to the space between the two bundle portions; the method comprising the steps of:

(a) introducing through each of the two accesses and into the space between the pipe bundle portions an elongated, rigid high pressure lance which is rotatable about its longitudinal axis and is shiftable in the direction of its longitudinal axis, each lance including a spray head at the end thereof introduced into said space, the spray head having at least one pair of radially directed spray openings for directing fluid jets radially outwardly from the longitudinal axis of the lance on substantially opposite sides of the spray head;

(b) introducing through each of the two accesses at least one suction line provided with at least one suction opening situated adjacent the bottom within the outer casing;

(c) shifting simultaneously stepwise both lances such that between each shifting step the jets from the spray head are directed between the rows of pipes of the pipe bundle portions;

(d) oscillating both of the lances at least between the shifting steps;

(e) spraying a cleaning liquid through the spray heads at least during the oscillating of the lances under a pressure higher than 200 bars and with a mean flow rate for both spray heads together of more than 200 liters per minute; and

(f) sucking the sprayed liquid away from the bottom through the suction lines during the cleaning with a total suction capacity which is markedly higher than the mean flow rate of the spray heads together.

4,620,882

PROCESS FOR CONTINUOUSLY COLORING STAINLESS STEEL

Takeshi Takeuchi, and Hideo Kaito, both of Chiba, Japan, assignors to Nisshin Steel Co., Ltd., Tokyo, Japan

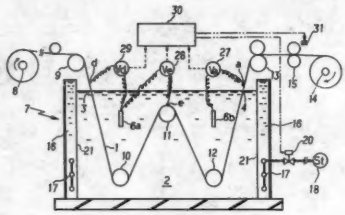
PCT No. PCT/JP84/00353, § 371 Date Feb. 28, 1985, § 102(e) Date Feb. 28, 1985, PCT Pub. No. WO85/00388, PCT Pub. Date Jan. 31, 1985

PCT Filed Jul. 10, 1984, Ser. No. 711,538

Claims priority, application Japan, Jul. 11, 1983, 58-124845

Int. Cl.[4] C23C *22/24*

U.S. Cl. 148—6.2 8 Claims



1. A process for continuously coloring a stainless steel wherein a strip of the stainless steel is continuously moved unidirectionally along its longitudinal direction at a certain velocity through a coloring solution of chromic acid-sulfuric acid series with a certain length of immersion of said strip in said coloring solution, which comprises

selecting first and second longitudinally spaced detecting positions between which the strip is caused to pass, at least a part of said length of immersion being present between said detecting positions;

simultaneously monitoring a first potential difference between the steel of the strip passing over the first detecting position and a reference electrode immersed in the coloring solution, and a second potential difference between the steel of the strip passing over the second detecting position and a reference electrode immersed in the coloring solution; and

controlling at least one of the temperature of the coloring solution and the time taken for the strip to pass through the coloring solution so that the variation with time of the difference between the first and second potential differences may be minimized.

4,620,883

FLUIDIZED-BED HEAT-TREATMENT METHOD FOR METALLIC WORKPIECES

Ewald Schwing, Wiesfurthstr. 99, 4133 Neukirchen-Vluyn; Peter Sommer, Johann-Strauss-Str. 13, 4174 Issum, and Horst Uhrner, Schumannstr. 9, 4174 Issum 2, all of Fed. Rep. of Germany

Filed Sep. 4, 1984, Ser. No. 647,139

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1983, 3331574

Int. Cl.[4] C21D *1/53*

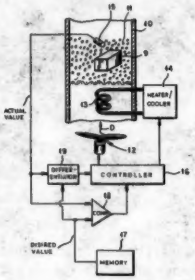
U.S. Cl. 148—13 5 Claims

1. A method of heat treating a metallic object suspended in a fluidizable bed, the method comprising the step of:

initially flowing a heated gas through the bed at a volume/time flow rate sufficiently high to fluidize the bed and for a time sufficient to raise the temperature of the object generally to a high treatment temperature lying between 1° C. and 1200° C.;

thereafter flowing the heating gas through the bed at a relatively low volume/time rate equal as most to 75% of the high rate and insufficient both to fluidize the bed and to prevent the object from cooling; and

thereafter maintaining the temperature of the object generally at the high treatment temperature by alternately heating the workpiece with high-rate flow and cooling with



low-rate flow and thereby only intermittently fluidizing the bed.

4,620,884

HEAT TREAT PROCESS AND FURNACE

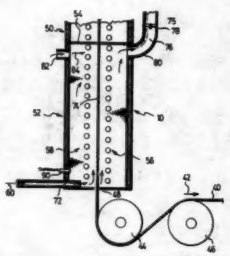
James E. Heath, Mississauga, Canada, assignor to Samuel Strapping Systems Ltd., Mississauga, Canada

Continuation-in-part of Ser. No. 169,309, Jul. 16, 1980, abandoned, which is a continuation-in-part of Ser. No. 61,471, Jul. 7, 1979, abandoned. This application Mar. 18, 1985, Ser. No. 713,237

The portion of the term of this patent subsequent to Oct. 21, 1997, has been disclaimed.

Int. Cl.[4] C21D *1/54*

U.S. Cl. 148—128 19 Claims



1. A process for heat treating metal strapping, wire or strip material, as the same is passed through a heat zone raising the temperature of the metal to a predetermined temperature range in the range of about 800° F. to 1600° F. depending upon the material being treated and the material property sought to be obtained, at least a portion of said process requiring a controlled atmosphere to minimize oxidation on the surface of the metal being treated,

said process comprising passing the metal to be treated through the heat zone along a generally straight path past opposed banks of high intensity infrared radiation lamps which provide the sole original heat source for determining the temperature to which said metal is to be heated,

energizing said lamps to produce high intensity short wave infrared radiation to heat the metal to be treated,

sensing the temperature of the material adjacent the exit of the heat zone,

controlling the intensity of radiation emitted by the lamps by varying the sensed temperature of the metal adjacent the exit of the heat zone to maintain the metal temperature at the exit of the heat zone within said predetermined range,

introducing a flow of a gas which is nonoxidizing with the

metal being treated and cause the gas flow to be in a direction opposite to the direction of metal to be treated travel through the heat zone at least adjacent the exit of the heat zone,

said gas flow enveloping said metal at least adjacent the exit of the heat zone and in the region where the material to be treated is at a temperature which would cause oxidation unless protected by the controlled atmosphere,

introducing sufficient air into the heat zone to cool the lamps and at points which do not require a controlled atmosphere and positively exhausting sufficient air and the controlled atmosphere at a position within the heat zone to provide a pressure differential between the exit of the heat zone and the exhaust of air and gas causing said gas flow along and enveloping the material to be treated,

continuously replacing the atmosphere within the heat zone at a rate sufficient to maintain the atmosphere about the material being treated at a temperature of about 500° F. or less.

4,620,885

SPRING MATERIAL FOR ELECTRIC AND ELECTRONIC PARTS

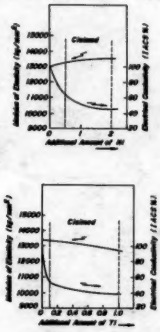
Naohiro Igata, 15-1, Nishioga-Kita 1-chome, Suginami-Ku, Tokyo, Japan, and Shinji Sato, Chiba, Japan, assignors to Nakasato Limited and Naohiro Igata, both of Tokyo, Japan

Filed Dec. 27, 1985, Ser. No. 813,921

Claims priority, application Japan, Nov. 19, 1985, 60-257544

Int. Cl.[4] C22C *0/9*

U.S. Cl. 148—435 **1 Claim**



1. A spring material for electric and electronic parts having a high modulus of elasticity and a good electrical conductivity, consisting of 0.5～2.0% by weight of Ni, 0.1～1.0% by weight of Ti, less than 0.2% by weight of P and the remainder being Cu.

4,620,886

METHOD OF MAKING ALUMINUM RIVETS WITH HIGH DUCTILITY RETENTION

Peter Wincierz, Steinbach, and Hans P. Sattler, Bad Homburg, both of Fed. Rep. of Germany, assignors to Suddeutsche Metallindustrie GmbH & Co. KG, Nuremberg, Fed. Rep. of Germany

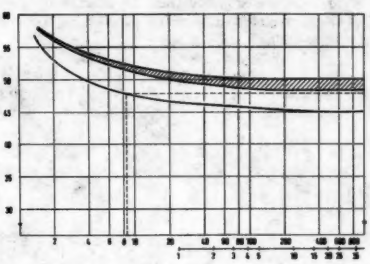
Filed Aug. 9, 1984, Ser. No. 639,374

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1983, 3328890

Int. Cl.[4] C22C *21/00*

U.S. Cl. 148—439 **11 Claims**

4. A wrought aluminum alloy for making rivets which retain a high ductility for a prolonged time, which alloy consists essentially of 0.20 to 0.80% Si, 0 to 0.70% Fe, 3.5 to 4.5% Cu, 0.40 to 1.0% Mn, 0.40 to 1.0% Mg, 0 to 0.10% Cr, 0 to 0.25% Zn, 0 to 0.20% Ti + Zr, other elements in an amount of 0 to 0.05% each and in a total of 0 to 0.15%, balance aluminum, and which contains 0.002 to 0.3% cadmium.



4,620,887

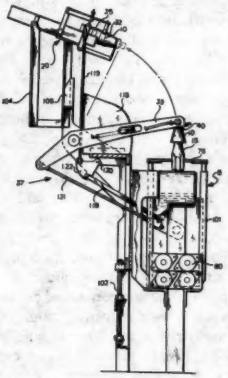
METHOD FOR APPLYING HEAT SHRINKABLE CONICAL PLASTIC LABELS ON CONTAINERS

Robert F. Kontz, Toledo, and Gary L. Moore, Swanton, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 625,481, Aug. 17, 1984, which is a division of Ser. No. 550,412, Nov. 10, 1983, Pat. No. 4,497,681. This application Aug. 30, 1985, Ser. No. 771,332

Int. Cl.[4] B65B *21/24*

U.S. Cl. 156—64 **2 Claims**



1. A process for applying hollow conical heat shrinkable labels to the top of a container, the process comprising the steps of:

A. providing a supply of stacked conical plastic labels generally above a line of moving containers, each container having a closure,

B. picking a label from the bottom of the stack,

C. turnig the conical label 180° from its position at the bottom of the stack,

D. applying the hollow label over the top of the container in a woodpecker-like action, and,

E. heat shrinkng the label tightly around the top of the bottle, the upper edge of the label overlapping the closure.

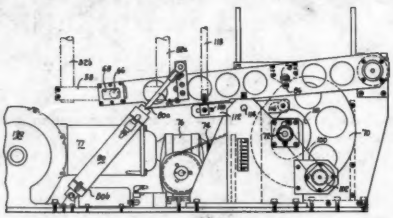
2. A process as defined in claim 1 including the step of sensing the presence of a container before steps B and C, and stopping the picking in step B if there is no container.

4,620,888

LABELING APPARATUS

William M. Easter, Solon; Eric Gifford, Cleveland Heights; Rick S. Wehrmann, Hudson, and Dana Liebhart, Cuyahoga Falls, all of Ohio, assignors to Automated Packaging Systems, Inc., Twinsburg, Ohio

Filed Sep. 4, 1984, Ser. No. 646,954
Int. Cl.[4] B32B *31/00*
U.S. Cl. 156—64 28 Claims



1. A drive system for actuating a labeling assembly forming a part of a labeling machine for applying tubular, flexible lables to product containers, comprising:

(a) carriage means mounted for reciprocal movement including means for mounting said labeling assembly;

(b) carriage actuating means including a drive cam defining an assymetrical profile such that said labeling assembly is driven through a lable applying stroke by said carriage means at an average speed that is less than an average speed at which said labeling assembly is return driven to a starting position by said carriage means;

(c) said carriage actuating means furhter including;

(i) a pivotally mounted lever;

(ii) a cam follower rotatably mounted by said lever and abuttably contacting said drive cam; and,

(iii) coupling means, connecting said lever to said carriage means such that arcuate reciprocal movement imparted to said lever by said drive cam produces reciprocal, rectilinear movement in said carriage means;

(d) a drive motor for rotating said rivee cam;

(e) a bottle advancing mechanism, comrising:

(i) an indexing cam driven by said drive motor in unison with said drive cam such that said drive cam and indexing cam are continuously and concurrently rotated during drive system operation so that synchronized movement in said labeling assembly and a bottle advancing mechanism, is achieved.

14. A system for stabilizing a product container at a labeling station in a labeling apparatus for applying tubular, flexible labels to the container, comprising:

(a) a pedestal for supporting the container to be labeled in alignment with a label applying assembly;

(b) a source of differential pressure including a perforate support plate by which said differential pressure is exerted on a region of said container;

(c) valve means actuated in coordination with said labeling assembly for controlling the communication of a differential pressure source with said perforate support plate;

(d) control means for closing said valve means after a product container has been labeled and being further operative to reopen said valve means as a product container to be labeled is advanced onto said perforate support plate.

4,620,889

METHOD AND APPARATUS FOR PLACING A HOOK-UP WIRE ON A MOUNTING BOARD

Rudolf Winter; Albert Horner, and Adalbert Lindner, all of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 6, 1985, Ser. No. 708,684
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1984, 3408338
Int. Cl.[4] B32B *31/12*
U.S. Cl. 156—166 6 Claims

1. A method for fixing an insulated electric hook-up wire to a circuit board, comprising the steps of:

providing the hook-up wire with a hot-melt adhesive on its outer insulation;

providing a heated laying tool with a heated tip which has a guidance channel for heating the wire and for pressing the wire onto the board;

after applying the hot-melt adhesive on the outer insulation, placing the hook-up wire in the guidance channel; and

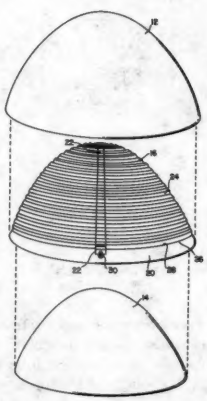
pressing the wire onto the board and continuously moving the laying tool along the wire as the wire with the hot-melt adhesive heated up at the tip is fed through the guidance channel.

4,620,890

METHOD OF MAKING A FLUTED CORE RADOME

Donald H. Myers, Kent, and James A. Lampman, Tacoma, both of Wash., assignors to Hitco, Newport Beach, Calif.

Continuation of Ser. No. 385,761, Jun. 7, 1982, abandoned. This application Feb. 29, 1984, Ser. No. 584,617
Int. Cl.[4] B31F *1/00*
U.S. Cl. 156—196 16 Claims



1. The method of making a generally dome-shaped structure from resin impregnated cloth comprising the steps of:

separately forming an outer skin, an inner skin and a core which are generally dome-shaped from resin impregnated cloth by applying pressure and heat to plies of the cloth arranged into desired configuations in separate operations;

locating the formed outer skin within a generally dome-shaped female mole;

applying adhesive to selected portions of an outer surface of the formed core;

positioning the formed core against the formed outer skin within said dome shaped female mold;

applying pressure to the formed core;

applying adhesive to selected portions of an inner surface of the formed core;

positioning the formed inner skin against the formed core within said dome shape female mold;
applying pressure to the formed inner skin; and
removing the formed outer skin, the formed core and the formed inner skin from said dome shaped female mold.

4,620,891

APPLYING LABELS TO PACKETS

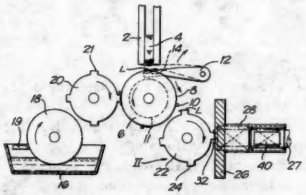
Barry G. Applegate, and William C. London, both of London, England, assignors to Molins PLC, London, England

Continuation of Ser. No. 472,367, Mar. 4, 1983, abandoned. This application Aug. 26, 1985, Ser. No. 769,636

Claims priority, application United Kingdom, Mar. 13, 1982, 8207378

Int. Cl.[4] B65C *1/06, 9/14*

U.S. Cl. 156—212 **17 Claims**



1. A method of feeding individual labels from a stack of labels in aligned succession comprising:
(a) supporting said labels in a stack from one end of which labels are successively withdrawable;
(b) withdrawing each successive label from said one end of said stack;
(c) transferring each of said successive labels towards a surface of a conveyor continuously moving along a path and on which are formed a succession of spaced projection means and to which suction is applicable upstream, considering the direction of movement of said conveyor along said path, of each projection means to retain a label on said surface of said conveyor; and
(d) depositing each of said successive labels onto said surface of said conveyor with the respective projection means abutting the trailing edge of said label to correctly align said label before it comes under the complete control of said suction of said conveyor.

11. Apparatus for feeding labels successively comprising:
(a) stack means for supporting a fixed upright stack of labels, said stack means having a bottom from which successive labels are withdrawable;
(b) rotor means spaced from said bottom of said stack means and arranged for rotation in a predetermined direction;
(c) at least one suction means provided on said rotor means for receiving a label;
(d) transfer means arranged for movement along a path between said bottom of said fixed stack and said rotor means for fully withdrawing each successive lowermost label entirely from said bottom of said stack means and transferring said label directly to said at least one suction means on said rotor means;
(e) projection means formed on said rotor means downstream of each of said at least one suction means as considered in the direction of rotation of said rotor means; and
(f) drive means for driving said rotor means continuously in timed relationship with the movement of said transfer means along said path to bring said at least one suction means adjacent to said bottom of said stack means, such that while said transfer means still retains at least partial control of said label and before said label comes under the complete control of said at least one suction means said projection means abuts the trailing end of the label to correctly align the label with said rotor means.

4,620,892

PROCESS FOR THE ASSEMBLY OF WOODEN COMPONENTS AND ASSEMBLY OF WOODEN COMPONENTS

Michael G. Dodson, Magnolia, and John R. Presley, Houston, both of Tex., assignors to Interox America, Houston, Tex.

Filed Aug. 31, 1984, Ser. No. 646,444

Int. Cl.[4] C09J *5/04*

U.S. Cl. 156—319 **13 Claims**

1. Process for the assembly of at least two wooden components comprising: first coating the components with a glue incorporating a thermosetting resin containing formaldehyde; then treating the glue with a peroxide; and, finally, pressing the components together while heat is applied.

4,620,893

APPARATUS FOR THE PLASMA TREATMENT OF DISK-SHAPED SUBSTRATES

Pierre Parrens, Grenoble, France, assignor to Nextral, Meylan, France

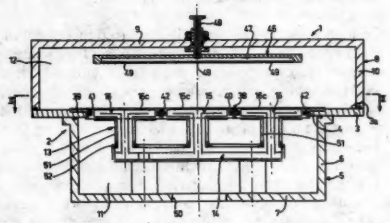
PCT No. PCT/FR84/00167, § 371 Date Feb. 28, 1985, § 102(e) Date Feb. 28, 1985, PCT Pub. No. WO85/00466, PCT Pub. Date Jan. 31, 1985

PCT Filed Jul. 5, 1984, Ser. No. 711,534

Claims priority, application France, Jul. 5, 1983, 83 11183

Int. Cl.[4] B44C *1/22;* **C03C** *15/00;* **C23F** *1/02;* **H01L** *21/306*

U.S. Cl. 156—345 **17 Claims**



1. Apparatus for the plasma treatment of disk-shaped substrates (45), comprising a reaction vessel (2) which has supply means (38) and discharge means (50) for a reaction gas, at least one first electrode, forming an anode (46), which is provided in the said vessel and is designed to be connected to a reference potential and, located in the said vessel, a plurality of second electrodes, forming cathodes, which are electrically insulated from the said first electrode and are designed to be connected to an alternating electrical energy source and have, in each case, a surface for receiving at least one substrate located on the same side as the said first electrode, so that a plasma can be formed between the said first electrode and the said second electrodes with a view to treating the substrates carried by the second electrodes, and additionally comprising at least one plate (38) which has a plurality of through passages (40, 41) formed so as to correspond, in each case, to at least one part of the said second electrodes (15, 16) and designed so that the walls of these passages (40, 41) extend, in each case, at the periphery of and at a distance from the peripheral walls of the corresponding second electrodes (15, 16) in such a way that reaction gas flow passages are provided, in each case, between the walls of the said through passages (40, 41) of the said plate (38) and the peripheral walls of the said second electrodes (15, 16).

4,620,894

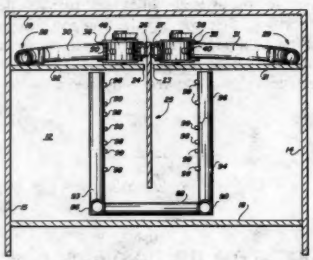
APPARATUS FOR PROCESSING CIRCUIT BOARD SUBSTRATE

Marshall I. Gurian, and Don P. Pender, both of Phoenix, Ariz., assignors to Advanced Systems Incorporated, Phoenix, Ariz.

Filed Mar. 11, 1985, Ser. No. 710,700

Int. Cl.[4] C23F *1/02*; B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 156—345 **4 Claims**



1. Apparatus for processing vertically oriented circuit board substrates including

(a) means for transporting said circuit board substrates, including

(i) first and second sets of tube support members circulating in respective closed paths, portions of each path being in opposed, spaced-apart, parallel relationship with portions of the other path;

(ii) first and second hollow resilient continuous tube members each operatively associated with one of said sets of tube support members, portions of each of said resilient tube members

contacting and being laterally displaced in a direction of travel by said support members of said associated set traveling in said parallel portions of said path thereof,

bearing against and compressing portions of the other when contacting and being transported by said support members of said associated set traveling in said parallel portions of said path thereof, and

bearing against said vertically oriented substrate interposed between said tube members to maintain said substrate in generally fixed position with respect to said portions contacting said substrate during transport thereof in said direction of travel,

(b) means for directing a fluid spray against said substrate while said substrate is transported by said circuit board transporting means; and,

(c) means for moving said tube support members along said paths.

4,620,895

APPARATUS FOR MANUFACTURING A SQUARE FILLER FOR WATER TREATMENT

Masashi Kato, No. 23, Miyahigashicho 1-chome,, Yokkaichi-shi, Mie-ken, Japan

Division of Ser. No. 591,523, Mar. 20, 1984, abandoned. This application Jul. 31, 1985, Ser. No. 761,341

Int. Cl.[4] B32B *31/14, 31/26*

U.S. Cl. 156—461 **2 Claims**

1. An apparatus for manufacturing square fillers for water treatment comprising:

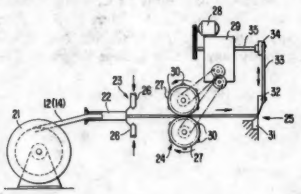
at least one reel means for unwinding one of a synthetic resin net sheet and a synthetic resin net tube;

means, positioned behind the at least one reel means in the longitudinal direction of the apparatus, for guiding and folding one of the net sheet and the net tube from the reel means in a substantially straight longitudinal direction;

means, positioned behind the guiding means in the longitudinal direction, for heating at least central portions of one of the net sheet and the net tube passing therethrough from the guiding means;

roller means, positioned behind the heating means in the longitudinal direction, for intermittently feeding and flattening with the application of pressure said one of the net sheet and the net tube into layers;

a plurality of projection means, mounted in spaced relationship from each other on the circumferential periphery of the roller means, for pressing and melt-bonding heated



central portions of said layers of said one of the net sheet and the net tube;

means, connected to the roller means, for intermittently driving said roller means; and

means, positioned behind the roller means in the longitudinal direction, for cutting the melt-bonded layers of said one of the net sheet and the net tube into predetermined short lengths of one of folded and rolled square fillers, respectively, for water treatment.

4,620,896

SINGLE FACER HAVING TWO SETS OF CORRUGATING ROLLS AND A SINGLE PRESSURE ROLL

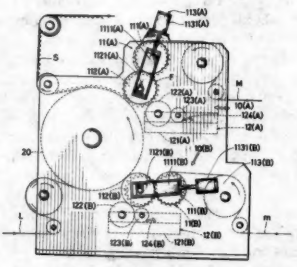
Hiroshi Sueki, and Kuniaki Yufu, both of Amagasaki, Japan, assignors to Rengo Co., Ltd., Osaka, Japan

Filed Dec. 9, 1985, Ser. No. 806,751

Claims priority, application Japan, Dec. 14, 1984, 59-264164

Int. Cl.[4] B31F *1/24*

U.S. Cl. 156—471 **3 Claims**



1. A single facer comprising (a) plural means for corrugating and pasting sheet medium, said means each including an upper corrugating roll, a lower corrugating roll meshing with said upper corrugating roll to form a nip for receiving a sheet medium to corrugate the same and means for applying adhesive to the peaks of the flutes of the corrugated medium, and (b) a pressure roll, characterized in that said upper and lower corrugating rolls are capable of being moved so that the lower corrugating roll may be brought into contact with said pressure roll to push the corrugated medium, to which the adhesive has been applied, against a sheet linerboard extending around the pressure roll to bond the corrugated medium to the linerboard.

4,620,897

METHOD FOR GROWING MULTICOMPONENT COMPOUND SEMICONDUCTOR CRYSTALS

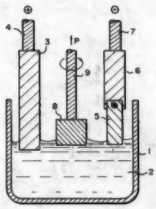
Kazuo Nakajima, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Sep. 19, 1984, Ser. No. 652,239

Claims priority, application Japan, Sep. 19, 1983, 58-171174; Jan. 26, 1984, 59-11090

Int. Cl.[4] C30B *17/00*

U.S. Cl. 156—602 6 Claims



1. A method for growing crystals of a three or more multicomponent compound semiconductor from its growth solution on a seed crystal or substrate, which method comprises providing a growth solution containing a seed crystal or substrate, immersing a source material containing at least one element which is essential to complete said compound semiconductor in said growth solution, immersing a current supplying electrode in said growth solution, and growing crystals of said three or more multicomponent compound semidconductor from said growth solution on said seed crystal or substrate while dissolving said source material in said growth solution by conducting controlled DC electric current from said current supplying electrode through said growth solution to said source material, thereby constantly maintaining a desired composition of said growth solution during the crystal growth step.

4,620,898

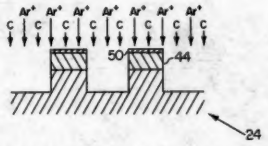
ION BEAM SPUTTER ETCHING

Bruce A. Banks, Olmsted Township, Cuyahoga County, and Sharon K. Rutledge, Bedford, both of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Sep. 13, 1985, Ser. No. 775,968

Int. Cl.[4] B44C *1/22;* C03C *15/00, 25/06*

U.S. Cl. 156—643 21 Claims



1. A method of ion beam sputter etching a surface of a substrate comprising the steps of

forming a carbon sputter mask on said surface,

simultaneously bombarding said masked surface with high energy ions to sputter etch the same while depositing low energy carbon atoms thereon whereby the thickness of the carbon sputter mask remains substantially constant, and

removing said carbon mask after a predetermined amount of substrate material has been sputtered away.

4,620,899

BREAST BOX NOZZLE FOR A PAPER MACHINE

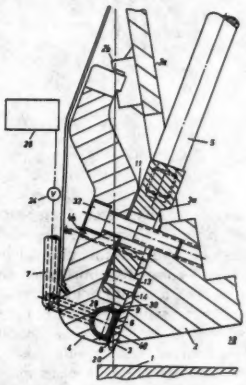
Karl Wolf, Heidenheim, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Jul. 3, 1985, Ser. No. 751,217

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1984, 3425433

Int. Cl.[4] D21F *1/06, 1/02*

U.S. Cl. 162—344 18 Claims



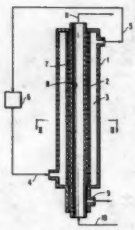
1. A breast box nozzle assembly, comprising structure defining nozzle passage means terminating in a nozzle passage discharge orifice for the flow therethrough of a fluid stream of pulp stock, said nozzle passage means comprising at least upper disposed lip structure means, a mounting surface carried by said lip structure means, a shutter situated operatively against said mounting surface carried by said lip structure means and adjustably movable along said mounting surface in at least two directions for adjustably determining the effective opening and effective configuration of said discharge orifice, when moved in a first of said two directions along said mounting surface said shutter extending generally transversely relatively further into said stream of fluid pulp, when moved in a second of said two directions opposite to said first direction and along said mounting surface said shutter extending generally transversely relatively less into said stream of fluid pulp, adjustment means for adjustably moving said shutter in said first and second directions, support means for operatively applying a counter pressure to a downstream side of said shutter which counter pressure opposes the fluid pressure applied to an upstream side of said shutter by said stream of fluid pulp, said support means comprising a support member, elastomeric means operatively interposed between said support member and said downstream side of said shutter in a manner whereby a space exists between said support member and said downstream side of said shutter, said elastomeric means being effective to react against said support member and apply a reacting force as said counter pressure to said downstream side of said shutter, and slide means interposed between said elastomeric means and said downstream side of said shutter, said slide means being effective to transmit said reacting force from said elastomeric means and structured to prevent said elastomeric means from entering said space during periods when said shutter is adjustably moved relative to said support member.

4,620,900

THERMOPERVAPORATION APPARATUS

Shoji Kimura, Tokyo; Shunichi Shimatani, and Atsuo Yoshimura, both of Osaka, all of Japan, assignors to Nitto Electric Industrial Company Ltd., Japan

Filed Dec. 6, 1984, Ser. No. 678,956
Claims priority, application Japan, Dec. 13, 1983, 58-234764
Int. Cl.[4] B01D *3/00, 13/00*
U.S. Cl. 202—172 14 Claims



1. A thermopervaporation apparatus comprising a microporous membrane which is impervious to liquids while readily allowing vapor of a liquid to pass therethrough, means providing for flow of a hot feed solution situated on one side of said microporous membrane, a porous liquid permeable heat conductive spacer in contact with at least part of the other side of said microporous membrane, and a heat-transmission wall in contact with at least part of the other side of said spacer so that at least said part of said membrane remains spaced apart from at least said part of said heat-transmission wall, said spacer defining condensate collection means between said membrane and said wall through which condensate can flow and from which condensate can be withdrawn, whereby the vapor of a component to be separated from the feed solution can permeate through said membrane, diffuse to said heat-transmission wall through said spacer and be cooled on said heat-transmission wall to form a condensate which can be withdrawn through said spacer.

4,620,901

SEPARATION OF ACETONE FROM METHANOL BY EXTRACTIVE DISTILLATION

Lloyd Berg, and Karl J. Warren, both of 1314 S. Third Ave., Bozeman, Mont. 59715

Filed Nov. 4, 1985, Ser. No. 794,474
Int. Cl.[4] B01D *3/40;* C07C *29/84*
U.S. Cl. 203—51 2 Claims

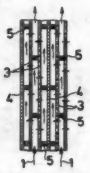
1. A method for recovering acetone from a mixture of acetone and methanol which comprises distilling a mixture of acetone and methanol in a rectification column in the presence of about one to two parts of extractive agent per part of acetone-methanol mixture, recovering essentially pure acetone as overhead product and obtaining the extractive agent and methanol from the stillpot, the extractive agent comprises at least dimethylformamide.

4,620,902

ELECTROLYSIS PROCESS USING LIQUID ELECTROLYTES AND POROUS ELECTRODES

Karl-Heinz Tetzlaff, Kelkheim (Taunus); Dieter Schmid, Schwalbach/Taunus, and Jürgen Russow, Kelkheim (Taunus), all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 17, 1985, Ser. No. 692,301
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1984, 3401638
Int. Cl.[4] C25B *1/00;* C25F *5/00*
U.S. Cl. 204—1 R 6 Claims



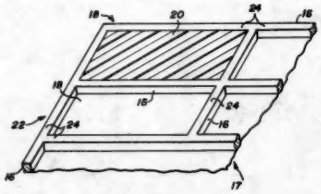
1. An electrolysis process for liquid electrolytes in a non-partitioned electrolytic cell having at least one porous electrode through which the electrolyte is passed comprising the steps of directing the electrolyte along a path essentially parallel to the surface of the porous electrode, providing a flow restriction point in the path of flow of the electrolyte and forcing the electrolyte to flow from the restriction point through the porous electrode from one side of the electrode to the other along a path essentially parallel to the flow of charge in the electrolysis process which flow of charge is generally perpendicular to the surface of the porous electrode.

4,620,903

ELECTROFORMING PROCESS

Richard A. Chamberlin, 2107 Ebbesen Ave., San Jose, Calif. 95124, and Mostafa Pournejat, San Jose, Calif., assignors to Richard A. Chamberlin, San Jose, Calif.

Filed Oct. 3, 1985, Ser. No. 783,778
Int. Cl.[4] C25D *1/20*
U.S. Cl. 204—4 18 Claims



1. A process for producing an electroformed nameplate from a positive master image comprising

(a) producing a production tool comprising a negative image formed by electroplating a positive master image;

(b) plating said production tool with a layer of metal to form a positive mandrel comprising a single metal shell having a front surface image and a reverse surface forming a hollow cavity; and

(c) backfilling said hollow cavity with a plastic material to fill said cavity to a level flush with the edges of the metal shell.

4,620,904

METHOD OF COATING ARTICLES OF MAGNESIUM AND AN ELECTROLYTIC BATH THEREFOR

Otto Kozak, 1089 W. Park Ave., Long Beach, N.Y. 11561

Filed Oct. 25, 1985, Ser. No. 791,574
Int. Cl.[4] C25D *11/00*
U.S. Cl. 58.4 42 Claims

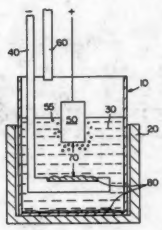
1. A method of coating magnesium and magnesium alloys predominating in magnesium with a hard, adherent, smooth, uniform and corrosion-resistant coating, which method comprises immersing the magnesium or its said alloy in an aqueous electrolytic solution comprising an alkali metal silicate, an alkali metal hydroxide and a fluoride compound, said magnesium or its alloy serving as the anode, immersing a second metal in said electrolytic solution in which said second metal serves as the cathode, applying an electrical potential of from about 150 to about 400 volts between said anode and said cathode until a visible spark is discharged across the surface of said magnesium or its alloy, and maintaining said voltage until the desired coating thickness is formed.

4,620,905

ELECTROLYTIC PRODUCTION OF METALS USING A RESISTANT ANODE

Gary P. Tarcy, Plum Borough; Thomas M. Gavasto, New Kensington, and Siba P. Ray, Plum Borough, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Apr. 25, 1985, Ser. No. 727,378
Int. Cl.[4] C25C *3/04, 3/06, 3/26, 3/34*
U.S. Cl. 204—64 R 26 Claims



1. An electrolytic process for electrowinning metal comprising passing a current between an anode and a cathode in a molten salt bath comprising an oxide of a metal to be collected, oxygen being evolved at said anode, said anode comprising an alloy consisting essentially of at least one first metal selected from the group consisting of Cu and Sn and at least one second metal selected from the group consisting of Ni, Fe, Ag, Zn, Mg, Al, and Y, wherein said first and second metals from oxides and the oxide of said first metal is more resistant than the oxide of said second metal to attack by said molten salt bath and the oxide of said second metal is more resistant than the oxide of said first metal to the diffusion of oxygen; and collecting said metal to be collected.

4,620,906

MEANS AND METHOD FOR REDUCING CARBON DIOXIDE TO PROVIDE FORMIC ACID

Peter G. P. Ang, Naperville, Ill., assignor to Texaco Inc., White Plains, N.Y.

Filed Jan. 31, 1985, Ser. No. 696,934
Int. Cl.[4] C25B *3/00*
U.S. Cl. 204—73 R 45 Claims

1. A process for reducing carbon dioxide to provide a useful product comprising the steps of:

a. providing a R_{II}/O_{II} redox coupled electrolyte solution,

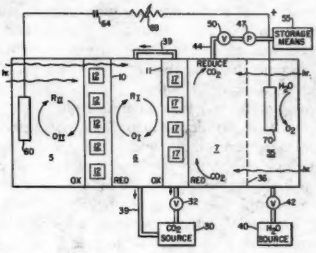
b. providing a R_I/O_I redox coupled electrolyte solution,

c. separating R_{II}/O_{II} solution from the R_I/O_I solution with a first membrane having photosensitizers,

d. providing carbon dioxide,

e. separating the carbon dioxide from the R_I/O_I solution with a second membrane containing a photosensitive semiconductor material and having a catalyst and a high hydrogen overpotential material on it,

f. providing water,



g. separating the water from the carbon dioxide in a manner so that hydrogen ions, but not oxygen, may pass from the water to participate in the reduction of the carbon dioxide, and

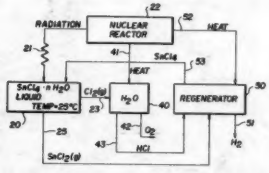
h. illuminating both membranes so as to produce excited photosensitizers to cause electron transfer from the R_{II}/O_{II} solution to the R_I/O_I solution thence to the carbon dioxide to cooperate with passed hydrogen ions in the reducing of the carbon dioxide to provide formic acid.

4,620,907

LOW TEMPERATURE RADIO-CHEMICAL ENERGY CONVERSION PROCESSES

Henry J. Gomberg, Ann Arbor, Mich., assignor to Texas Gas Development Corporation, Owensboro, Ky.

Filed Jun. 5, 1984, Ser. No. 617,595
Int. Cl.[4] B01J *19/08, 19/12*
U.S. Cl. 204—157.44 9 Claims



1. The radio-chemical method of converting radiated energy into chemical energy form comprising the steps of:

(a) establishing a starting chemical compound in the liquid phase that chemically reacts endothermically to radiation and heat energy to produce a gaseous and a solid constituent of said compound,

(b) irradiating said compound in its liquid phase free of solvents to chemically release therefrom in response to the radiation said gaseous and solid constitutents,

(c) physically separating the solid and gaseous phase constituents from the liquid, and

(d) chemically processing said constituents to recover therefrom energy stored therein by the irradiation step (b).

4,620,908

METHOD FOR DESTROYING MICROBIAL CONTAMINATION IN PROTEIN MATERIALS

John P. Van Duzer, Huntington Beach, Calif., assignor to Biocell Laboratories, Inc., Carson, Calif.

Continuation-in-part of Ser. No. 538,562, Oct. 3, 1983, abandoned. This application Jun. 18, 1984, Ser. No. 622,019

Int. Cl.[4] C07G 7/00; A61L 2/00; A61K 41/00; B01J 19/08

U.S. Cl. 204—157.68 19 Claims

1. A method for destroying microbial contamination in protein material and rendering such material relatively free from such microbial contamination, said method comprising:

(a) selecting protein material derived from or contained in (1) animal or human body fluids which perform a biological function, or (2) animal or human body cellular tissue which performs a biological function, or (3) protein material grown in or derived from an in-vitro environment and which performs a biological function,

(b) reducing the temperature of such selected protein material to the freezing point of such protein material when in a non-lyophilized state, and reducing the temperature of such protein material when in a lyophilized state to a temperature of at least −3 degrees C.,

(c) applying gamma radiation to said material at such reduced temperature and which temperature remains relatively constant during irradiation and where the gamma radiation is irradiated in a relatively constant rad amount during irradiation but which is sufficient to destroy substantially all microbial contamination in such protein material without substantially reducing protein efficacy, to thereby provide a protein material relatively free of microbial contamination and which still exhibits substantial biological efficacy.

4,620,909

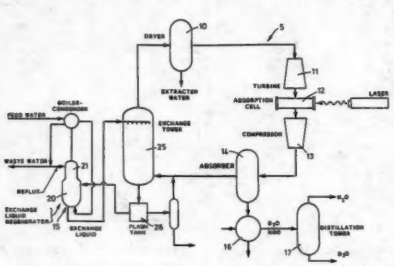
METHOD FOR ISOTOPE REPLENISHMENT IN AN EXCHANGE LIQUID USED IN A LASER INDUCED ISOTOPE ENRICHMENT PROCESS

Graham M. Keyser, 1816 Will Scarlett Drive, Mississauga, Ontario, Canada (L5K 2K2); David L. Mader, 1294 Islington Avenue, Apt. #704, Islington, Ontario, Canada (M9A 3K2), and James A. O'Neill, 111 Pacific Avenue, Apt. #604, Toronto, Ontario, Canada (M6P 2P2)

Filed Oct. 31, 1983, Ser. No. 547,475

Int. Cl.[4] C07C 17/00

U.S. Cl. 204—157.22 17 Claims



1. A method for deuterium or tritium isotope replenishment of an exchange liquid in a process for concentrating deuterium or tritium by means of a laser induced selective photodissociation of a deuterium or tritium containing working compound mixed with its protiated or deuterated analog, said working compound being selected from the group consisting of a dueterated or tritiated analog of a dihalomethane, a trihalomethane, a 1,2-dihaloethylene, a trihaloethylene, a tetrahaloethane, and a pentahaloethane, comprising the steps of:

selectively laser photodissociating the working compound to give an isotope enriched compound and an isotope depleted working compound;

contacting the isotope depleted working compound mixture countercurrently with an exchange liquid having approximately the isotope concentration of an external source feed stream of water or D_2O in a first contacting column, said countercurrent contacting providing an isotope replenishment of the working compound as it moves up the column and an isotope depletion of the exchange liquid as it moves down the column, the exchange liquid consisting essentially of a mixture of water or D_2O and a strong base catalyst;

removing isotope deplated exchange liquid from the bottom of the first column;

contacting the isotope depleted exchange liquid countercurrently with the feed stream in a second contacting apparatus thereby providing isotope replenishment of the exchange liquid and isotope depletion of the feed stream without causing salting out of the base catalyst; and

removing the isotope replenished exchange liquid from one end of the second apparatus for use in the first column and removing isotope depleted water or D_2O steam from the other end of the second apparatus.

4,620,910

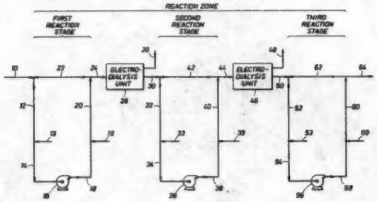
PROCESS FOR THE PRODUCTION OF DICHLOROHYDRINS

F. Norman Grimsby, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 27, 1985, Ser. No. 814,331

Int. Cl.[4] B01D 51/02

U.S. Cl. 204—182.4 4 Claims



1. In a continuous process for the production of an aqueous solution of dichlorohydrin by the reaction of allyl chloride, water and chlorine in a reaction zone comprising a plurality of reaction stages arrayed in series flow, the method for improving selectivity which comprises electrodialyzing a significant part of the reaction mixture from each stage, except the final reaction stage, in a separate electrodialysis zone to afford (1) a concentrate stream having higher chloride content than the reaction mixture feed to each said electrodialysis zone, and (2) a diluate stream containing the dichlorohydrin and having a lower chloride content than said feed to each said electrodialysis zone; removing each concentrate stream from the reaction zone, and passing each diluate stream to a subsequent reaction stage.

4,620,911

PROCESS FOR THE PRODUCTION OF DICHLOROHYDRIN

George C. Blytas; E. Gordon Foster, and F. Norman Grimsby, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 27, 1985, Ser. No. 814,332

Int. Cl.[4] B01D 57/02

U.S. Cl. 204—182.4 7 Claims

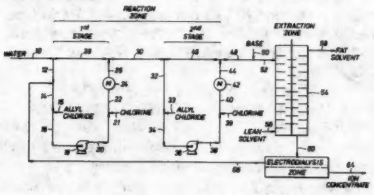
1. In a continuous process for the production of an organic solvent solution of dichlorohydrin, the method for reducing

the quantity of fresh water used in the reaction, which method comprises:

(a) reacting allyl chloride, water and chlorine in a reaction zone to form an aqueous mixture of dichlorohydrin,

(b) contacting in an extraction zone the reaction zone effluent with a water immiscible inert organic solvent for the dichlorohydrin to obtain a dichlorohydrin-enriched solvent and an aqueous phase,

(c) passing said dichlorohydrin-enriched solvent from said extraction zone,



(d) passing said aqueous phase from the extraction zone to an electrodialysis zone,

(e) electrodialyzing said aqueous phase in said electrodialysis zone to obtain: (1) a concentrate stream having chloride content higher than said aqueous phase, and (2) a diluate stream having chloride content lower than said aqueous phase,

(f) withdrawing said concentrate stream, and

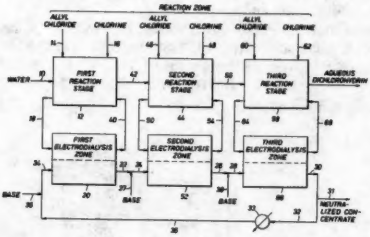
(g) recycling at least part of said diluate stream from step (e) to the reaction zone of step (a).

4,620,912

PROCESS FOR THE PRODUCTION OF DICHLOROHYDRIN

F. Norman Grimsby, and George C. Blytas, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 27, 1985, Ser. No. 814,333
Int. Cl.[4] B01D *57/02*
U.S. Cl. 204—182.4 **6 Claims**



1. In a continuous process for the production of an aqueous solution of dichlorohydrin by the reaction of allyl chloride, water and chlorine in a reaction zone, the method for removing by-product chloride and hydrogen ions which comprises:

(a) electrodialyzing a significant part of the reaction mixture in an electrodialysis zone to afford (1) a concentrate stream having a chloride content higher than that concentrate inlet feed to said electrodialysis zone, and (2) a diluate stream containing dichlorohydrin and having a lower chloride content than said reaction mixture electrodialysis feed,

(b) neutralizing a substantial portion of the hydrogen ions in the concentrate stream by the addition of a basic substance,

(c) withdrawing a portion of said neutralized concentrate stream, and

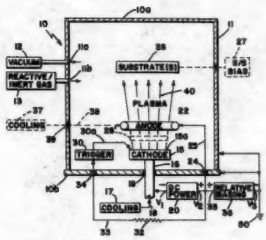
(d) recycling said diluate stream from said electrodialysis zone to said reaction zone.

4,620,913

ELECTRIC ARC VAPOR DEPOSITION METHOD AND APPARATUS

Clark Bergman, Roseville, Minn., assignor to Multi-Arc Vacuum Systems, Inc., St. Paul, Minn.

Filed Nov. 15, 1985, Ser. No. 798,484
Int. Cl.[4] C23C *15/00*
U.S. Cl. 204—192 R **34 Claims**



1. In an electric arc vapor deposition process suitable for performing vapor deposition on substrates within an evacuated deposition chamber by means of a coating plasma formed by an electric arc passing between a sacrificial coating material source cathode and an anode, the process comprising:

(a) evacuating the deposition chamber;

(b) establishing a first voltage difference and electric return path between the anode and the sacrificial coating material source cathode within the evacuated chamber, adequate to sustain an electric arc discharge therebetween;

(c) initiating an electric arc between said sacrificial cathode and said anode;

(d) establishing a second voltage difference between at least one conductive surface within said evacuated chamber and said cathode that has a value slightly less than that of said first voltage difference, wherein said anode is more positively biased relative to said cathode than is said one conductive surface;

(e) providing an electric current flow path between said anode and said one conductive surface; and

(f) configuring and arranging said anode within said chamber relative to said sacrificial cathode such that electrons discharged by said arc from said sacrificial cathode will tend to be attracted more toward said anode than toward said one conductive surface.

4,620,914

APPARATUS FOR PURIFYING HYDROGEN

Sandors G. Abens, Rye, N.Y., and Mohammad Farooque, Huntington, Conn., assignors to Energy Research Corporation, Danbury, Conn.

Filed Jul. 2, 1985, Ser. No. 751,375
Int. Cl.[4] C25F *9/00*
U.S. Cl. 204—265 **13 Claims**

1. An apparatus comprising:

a plurality of assemblies each including:

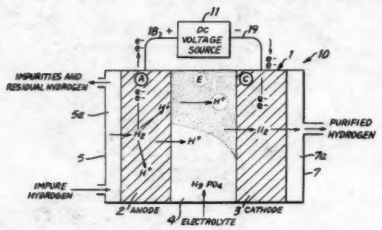
a gas diffusion anode electrode;

a first plate adjacent said anode electrode, said first plate having first passages for carrying a hydrogen containing medium to said anode electrode, each of said first passages of said first plate having open input and output ends;

a gas diffusion cathode electrode;

a second plate adjacent said cathode electrode, said second

plate having second passages each of which having an open output end;
and said anode and cathode electrodes being adapted to receive an electrolyte therebetween;
said assemblies being arranged in a stack with the open input and open ends of the first passages of the assemblies being in respective alignment and the open output ends of the second passages of the assemblies being in alignment;
means for applying a voltage across the anode and cathode electrodes of each of said assemblies, whereby the hydrogen content in the medium in the first passages of each of said plurality of assemblies is transferred via said anode



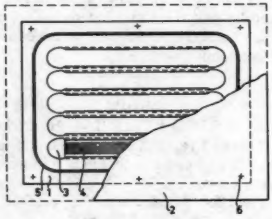
electrode, electrolyte and said cathode electrode of that assembly to said second passages of said assembly with an increased purity;
a first input manifold common to the input ends of the first passages of said assemblies for delivering said hydrogen containing medium to said input ends of said first passages;
a first output manifold common to the output ends of the second passages of said assemblies for receiving from said output ends of said second passages said increased purity hydrogen content;
and a second output manifold common to the output ends of the first passages for receiving from said output ends of said first passages gas exhausted from said first passages.

4,620,915

BIPOLAR FINGER ELECTRODE

Tommy Öhlin, Nyhamnsläge, Sweden, assignor to KemaNord Blekkemi AB, Stockholm, Sweden

Filed Jan. 28, 1985, Ser. No. 695,280
Claims priority, application Sweden, Jan. 30, 1984, 8400459
Int. Cl.[4] C25B *11/03*
U.S. Cl. 204—284 **2 Claims**



1. A bipolar electrode comprising a two-part base plate (1, 2), one part being the anode side in a cell space and containing titanium and the other part being the cathode side in an adjacent cell space and containing iron, both parts having electrode fingers fixed essentially perpendicular to the base plates, wherein electrical contact between the base plate is maintained by means of a plurality of elastic and electrically conductive louvers (4), said louvers being pressed into contact with the parts of said base plate by means of a mechanical joint between the parts of the base plate, and said louvers being arranged between parts of the base plate in such a manner that the contact lines of the louvers between parts of the base plate are essentially parallel to the electrode fingers on the same base plate, and the space between the parts of the base plate being sealed (5) so as to prevent electrolyte penetration but to allow hydrogen penetration.

4,620,916

DEGRADATION RETARDANTS FOR ELECTROPHORETIC DISPLAY DEVICES

Dirk A. Zwemer, 1033 Jungfrau Ct., Milpitas, Calif. 95035; Solomon I. Beilin, 520 Van Buren Ave., #303, Oakland, Calif. 94610; Long K. Truong, 3627 Tunis Ave., San Jose, Calif. 95132, and Lewis T. Lipton, 17660 Vista Ave., Monte Sereno, Calif. 95030

Filed Sep. 19, 1985, Ser. No. 777,837
Int. Cl.[4] B03C *5/00*; C25D *1/12, 13/00*
U.S. Cl. 204—299 R **24 Claims**

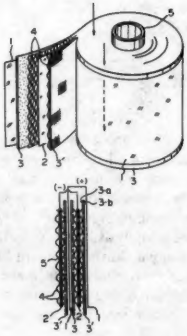
1. A method for extending the operating lifetime of electrophoretic display device suspensions comprising:
dissolving an effective amount of a degradation retardant in a colloidal suspension to reduce electrochemical degradations of the colloidal suspension within an electrophoretic display device during operation thereof, the colloidal suspension including a dielectric liquid, a dye dissolved in the dielectric liquid, and a plurality of pigment particles suspended in the dielectric liquid, the degradation retardant consisting essentially of a redox agent, a redox agent precursor, an inhibitor agent or mixtures thereof, the redox agent capable of being reversibly oxidized and reduced during operation of the electrophoretic display device having the colloidal suspension therein, the redox agent precursor reacting with free radical species of the colloidal suspension to form the redox agent as a reaction product therefrom, and the inhibitor agent capable of reacting with free radical species to terminate chemical chain reactions during operation of the electrophoretic display device having the colloidal suspension therein.

4,620,917

ELECTROSTATIC FILTERING DEVICE

Masaei Nozawa, Aichi; Sigeru Kamiya, Chiryu, and Shigeo Iwashita, Kariya, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Continuation of Ser. No. 461,526, Jan. 27, 1983, abandoned. This application Apr. 10, 1985, Ser. No. 721,495
Claims priority, application Japan, Feb. 8, 1982, 57-17601
Int. Cl.[4] B01D *35/06*; B03C *5/02*
U.S. Cl. 204—302 **22 Claims**



1. An electric filtering device, especially for cleaning oil containing carbon particles, said device comprising:

a container for receiving particle-containing liquid to be cleaned;

a positive electrode placed in said container;

a negative electrode arranged, in said container, physically substantially in parallel to said positive electrode;

means for causing a flow of said liquid between and physically substantially in parallel to said positive and negative electrodes;

means for electrically energizing said positive and negative electrodes to produce an electric field between said positive and negative electrodes;

a porous dielectric film arranged between said positive and negative electrodes and having having pores ranging in width from 1 μm to 2 μm such that said particles to be collected cannot pass freely through the pore space of said porous dielectric film although the to-be-cleaned liquid itself can flow freely therethrough, whereby said particles are collected on the main surface of said porous dielectric film when an electric field is applied to said particle-containing liquid between said positive and negative electrodes; and

porous spacers arranged between said porous dielectric film and each of said positive and negative electrodes, said porous spacers having pores larger than the pores of the dielectric film and a thickness such that said particle-containing liquid can flow freely through the pore space of said porous spacers and said particles collected on the main surface of said porous dielectric film can be stacked and held in the pore space of said porous spacers.

4,620,918

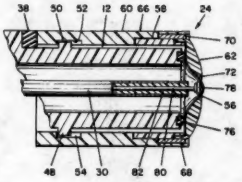
SELECTIVE SENSOR CONSTRUCTION

Gary L. Bukamier, 4341 Eureka, and Steven L. Rupert, 5616 Whitewater St., both of Yorba Linda, Calif. 92686

Filed May 3, 1985, Ser. No. 730,097

Int. Cl.[4] G01N *27/30*

U.S. Cl. 204—403 **11 Claims**



1. For inclusion in a chemically selective sensor of the kind in which two spaced electrodes are bridged by an electrolyte and separated from the external environment by a membrane which is permeable by selected ions or molecules, in combination:

an electrode and electrolyte container having a wall formed with an opening of given size;

a membrane disposed to cover said opening, the membrane being fixed to said container at the margins of said opening entirely around said opening;

a cover formed with a through hole and fixed to the container overlying the membrane such that said hole overlies a central region of said membrane;

said container comprising a generally cylindrical tube one open end of which forms said opening;

said cover forming a closure for said one open end; and said container comprising a second tube telescoped into the first mentioned tube such that an open end of said second tube is sealed against said membrane.

4,620,919

PITCH FOR THE PRODUCTION OF CARBON FIBERS

Seiichi Uemura, Tokyo; Hiroaki Takashima, Kawasaki; Osamu Kato, Yokohama, and Hazime Nakazima, Hiratsuka, all of Japan, assignors to Nippon Oil Company, Japan

Filed Dec. 23, 1985, Ser. No. 812,792

Claims priority, application Japan, Dec. 28, 1984, 59-274280

Int. Cl.[4] C10C *1/18, 3/02, 1/00*

U.S. Cl. 208—45 **4 Claims**

1. Pitch for the production of carbon fibers which contains from 5 to 40% of the optically anisotropic region which is insoluble in organic solvents having a solubility parameter from 7.4 to 9.0 but is soluble in organic solvents having a solubility parameter from 9.2 to 11.0.

4,620,920

CATALYTIC CRACKING OF HYDROCARBON OILS FROM TWO MIXTURES BOILING ABOVE THE GASOLINE RANGE

Huno Van Der Eijk; Jacobus J. L. Heinerman, and Ian E. Maxwell, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 31, 1985, Ser. No. 761,121

Claims priority, application Netherlands, Nov. 22, 1984, 8403551

Int. Cl.[4] C10G *11/18, 69/04*

U.S. Cl. 208—86 **22 Claims**

1. A process for the preparation of a hydrocarbon product boiling in the gasoline range from a mixture of hydrocarbon oils boiling above the gasoline range which comprises catalytically cracking said mixture of said hydrocarbon oils in a catalytic riser reactor having a reactor carbon requirement (R) between 3 and 8%w, said mixture composed of: (a) a first hydrocarbon oil having a Conradson carbon test value (C_1) in percent weight (%w) such that the quotient C_1/R is higher than 0.8 and (2) a second hydrocarbon oil having a Conradson carbon test value (C_2) such that the quotient C_2/R is lower than 0.2 and wherein said second hydrocarbon oil has a basic nitrogen content (N) of less than 150 ppmw and a tetra+ aromatics content (T) of less than 3%w.

4,620,921

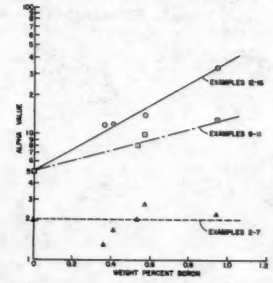
ACID-CATALYZED HYDROCARBON CONVERSION PROCESS

Clarence D. Chang, Princeton, and Joseph N. Miale, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 713,213, Mar. 18, 1985, abandoned, which is a continuation-in-part of Ser. No. 631,688, Jul. 16, 1984, Pat. No. 4,524,140, which is a continuation-in-part of Ser. No. 465,987, Feb. 14, 1983, Pat. No. 4,513,091. This application Oct. 15, 1985, Ser. No. 787,574

Int. Cl.[4] C10G *11/05, 47/16*

U.S. Cl. 208—111 **18 Claims**



1. A process for converting a feedstock comprising hydro-

carbon compounds to conversion product comprising hydrocarbon compounds of lower molecular weight than feedstock hydrocarbon compounds which comprises contacting said feedstock at conditions sufficient to convert said feedstock to said products with a catalyst composition prepared by a method for substituting aluminum or gallium for boron or iron contained in the robust framework of a high silica content crystalline zeolite, which method comprises hydrothermally treating said zeolite in the presence of a compound of said aluminum or gallium, said hydrothermal treatment being under conditions effective to induce said substitution.

4,620,922

CATALYST AND PROCESS FOR THE HYDROTREATING OF NITROGEN-CONTAINING FEEDS

A. Martin Tait; Thomas D. Nevitt, both of Naperville, Ill., and Albert L. Hensley, Jr., Munster, Ind., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation of Ser. No. 636,846, Aug. 1, 1984, abandoned, which is a continuation of Ser. No. 512,645, Jul. 11, 1983, abandoned, which is a continuation-in-part of Ser. No. 418,226, Sep. 15, 1982, abandoned, which is a division of Ser. No. 200,544, Oct. 24, 1980, abandoned, which is a continuation of Ser. No. 181,433, Aug. 4, 1980, Pat. No. 4,306,965, which is a continuation of Ser. No. 21,575, Mar. 19, 1979, Pat. No. 4,244,144. This application Jan. 14, 1986, Ser. No. 818,773

Int. Cl.[4] C10G *45/38*

U.S. Cl. 208—254 H **11 Claims**

1. A process for the hydrodenitrogenation of a hydrocarbon stream containing a substantial amount of nitrogen compounds, which process comprises contacting said stream in a reaction zone in the presence of hydrogen and under hydrodenitrogenation conditions with a catalyst comprising a hydrogenation component comprising chromium, molybdenum, and at least one metal from Group VIII of the Periodic Table of Elements deposited upon a porous alumina-silica support, the silica of said support being present in an amount within the range of about 10 wt% to about 50 wt%, based upon the weight of said support, said chromium, molybdenum, and metal from Group VIII being present in the elemental form, as oxides, as sulfides, or mixtures thereof, said catalyst having a surface area within the range of about 150 m^2/gm to about 350 m^2/gm, a pore volume within the range of about 0.4 cc/gm to about 1.0 cc/gm, an average pore diameter within the range of about 60 A (6 nm) to about 150 A (15 nm), the volume of pores having a diameter of 60 A (6 nm) to 150 A (15 nm) is less than 80% of the volume of pores having a diameter of 0 A (0 nm) to 150 A (15 nm), the volume of pores having a diameter of 150 A (15 nm) to 1,200 A (120 nm) is greater than 0.01 cc/gm.

4,620,923

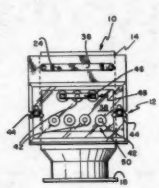
GATED DRAWER FILTER

Richard P. Meister, Newton, Kans., assignor to Bunting Magnetics Company, Newton, Kans.

Filed Jul. 16, 1984, Ser. No. 631,257

Int. Cl.[4] B03C *1/26*

U.S. Cl. 209—223 R **6 Claims**



1. A drawer filter comprising in combination a housing means having housing sides and a structure defining a top flange means including a top flange opening and a bottom flange means including a bottom flange opening in communication with the top flange opening;

a magnetic filtering means slidably lodged within said housing means between said top flange opening and said bottom flange opening such that said top flange opening and said bottom flange opening and said magnetic filtering means are in a general aligned relationship with respect to each other in order to filter magnetically any particulate matter or the like, passing through said top flange opening and said bottom flange opening, said magnetic filtering means comprises a unitary front plate means, a unitary back plate means, and a plurality of magnetic cylinder means interconnecting said unitary front plate means with said unitary back plate means, said plurality of magnetic cylinder means includes at least one magnetic row of cylinder means and said unitary front plate means and said unitary back plate means generally define part of said housing sides when said magnetic filtering means is disposed within said housing means;

a gate valve means slidably disposed within said housing means between said top flange opening and said magnetic filtering means in order to control the flow of particulate matter through and between said top flange opening and said bottom flange opening, said gate valve means comprises a valve plate means having a generally horizontal planar surface including a first pair of generally parallel sides and a second pair of generally parallel sides; and at least one rod means secured to said valve plate means and slidably disposed through said housing means and adapted to move said valve plate means.

4,620,924

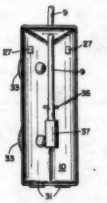
AQUARIUM CORNER FILTER

Jerome Goldman, New York; Marvin Goldman, Great Neck; Gerald Phillips, Glen Cove; Terry Goldman, New York, and John Judy, Hempstead, all of N.Y., assignors to Penn Plax Plastics, Inc., Garden City, N.Y.

Filed Oct. 19, 1984, Ser. No. 662,838

Int. Cl.[4] E04H *3/16, 3/20*

U.S. Cl. 210—169 **20 Claims**



1. A water filter for use inside of an aquarium which comprises,

(a) a filter cavity housing with means defining openings on at least one wall to allow the entry and exit of aquarium water through the interior of the filter cavity housing,

(b) a sleeve unit which is removably attached to the filter cavity housing,

(c) an attaching means, formed on at least one wall of the filter cavity housing and one wall of the sleeve unit, for removably attaching the filter cavity housing to the sleeve unit,

(d) a means for attaching the sleeve unit to the wall of the aquarium, formed on the sleeve unit, and

(e) a water current generating means for generating the flow of water into and through the interior of the filter cavity housing, the water generating means being powered by a bubbling mechanism which is attached to the sleeve unit in a manner wherein said bubbling mechanism remains

stationary in the sleeve unit when the filter cavity is detached from the sleeve unit.

20. A water filter for use inside of an aquarium which comprises,

(a) a filter cavity housing made of plastic material at least a portion of which is transparent, with means defining openings on at least one wall to allow the entry and exit of aquarium water through the interior of the filter cavity housing, said filter cavity housing and openings being adapted to accommodate a cartridge type filter material,

(b) a sleeve unit made of a plastic material which is removably attached to the filter cavity housing by at least one slide in groove connecting mechanism,

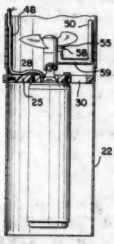
(c) a means for attaching the sleeve unit to the wall of the aquarium, formed on the sleeve unit, comprising at least one suction cup,

(d) a water current generating means, for generating the flow of water into and through the interior of the filter cavity housing, the current generating means being powered by a bubbling mechanism comprising an air stone adapted for connection to an outside supply of air and wherein the bubbling mechanism is attached to the sleeve unit in a manner wherein said bubbling mechanism remains stationary in the sleeve unit when the filter cavity is detached from the sleeve unit.

4,620,925
AEROBIC SEWAGE SYSTEM AND AERATING UNIT THEREFORE

Douglas M. Allen, 2761 Pleasant St., Ashland, Ky. 41101

Filed Aug. 7, 1985, Ser. No. 763,154
Int. Cl.[4] C02F *3/12*; C10J *1/18*
U.S. Cl. 210—219 **4 Claims**



1. An agitating and aerating motor-pump assembly for an aerobic sewage digestion system, comprising

an elongated generally cylindrical housing having an open end and means for supporting said housing in a vertical orientation within a pool of sewage contained in a chamber,

an electric drive motor having a closed casing mounted within said housing in spaced relation thereto and having a rotatable output shaft extending upwardly through said casing,

a propeller having a hub fixed to said shaft and operable when rotated to move liquid upward through said open end of said housing and around said motor,

a power supply line extending to said motor from outside the chamber, and

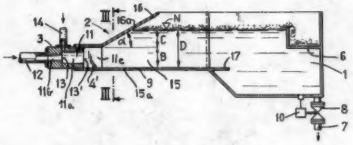
an air induction tube having an open end located in close proximity to said propeller hub and extending to a location exterior of the chamber

whereby rotation of said propeller produces cavitation adjacent said hub at the location of said open end of said air induction tube thereby drawing air into the liquid flow induced by said propeller and said propeller mixes such air into the liquid moved through said housing.

4,620,926
FLOATATION APPARATUS FOR FLOTATION OF FIBROUS STOCK SUSPENSION RECOVERED FROM WASTE PAPER

Erich Linck; Herbert Holik, both of Ravensburg; Woflgang Siewert, Ravensburg-Weingartshof, and Anton Selbherr, Herbertingen, all of Fed. Rep. of Germany, assignors to Sulzer-Escher Wyss GmbH, Ravensburg/Württ., Fed. Rep. of Germany

Filed Dec. 24, 1984, Ser. No. 685,759
Claims priority, application Switzerland, Jan. 9, 1984, 71/84
Int. Cl.[4] B03D *1/24*; C02F *1/24*
U.S. Cl. 210—221.2 **18 Claims**



1. A flotation apparatus for the flotation of fiber stock suspensions recovered from waste paper, comprising:

a container;

at least one infeed device for the infeed of the fiber stock suspension which is to be flotated;

said at least one infeed device flow communicating with said container;

at least one aeration element provided for said at least one infeed device;

said at least one aeration element serving for the aeration of the fiber stock suspension which is intended to be delivered to said at least one infeed device and to said container;

means defining an outlet for good stock for removal thereof from said container;

means defining an outlet for flotation foam for removal thereof from said container;

said container, during operation of said flotation apparatus, possessing a free liquid level of the fiber stock suspension;

said at least one infeed device having a discharge mouth opening into said container;

said fiber stock suspension possessing an essentially horizontally extending flow within said at least one infeed device forwardly of said discharge mouth; and

said at least one aeration element having an outlet cross-section situated at a region which is located between 0 to 500 mm below the liquid level of the fiber stock suspension in the container such that said essentially horizontally extending flow of said fiber stock suspension is infed in neighboring relationship to said free liquid level in said container.

4,620,927
POLYMERIC MICROSCREEN SUPPORT WHEEL AND ASSEMBLY

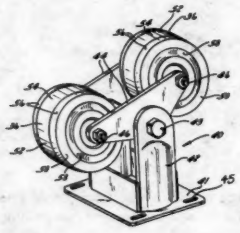
Thomas J. Casper, Waukesha, and Susan M. Rasper, Brookfield, both of Wis., assignors to Envirex Inc., Waukesha, Wis.

Filed May 17, 1985, Ser. No. 735,240
Int. Cl.[4] B01D *33/10*, *35/00*
U.S. Cl. 210—236 **12 Claims**

1. In an apparatus for screening a water supply comprising a tank, a drum mounted in said tank and having an open end, a closed end rotating horizontally around a central longitudinal axis, a replaceable microscreen media grid structure mounted on the outer periphery of said drum, a rigid frame rotatably supporting said drum by means of a journal bearing at the closed end and a plurality of support wheels at the open end, and means for introduction of the water to be screened into the

interior of said drum, wherein a given elevation of screened water is maintained in said tank as said drum rotates within said tank on said horizontal axis with the uppermost section of its cylindrical surface above said elevation for cleaning purposes, an improved microscreen support comprising:

a plurality of pivotable support wheel assemblies attached to said frame and supporting the inner periphery of the open end of said rotating drum, each of said wheel assemblies comprising means designed for providing corrosion-resistant microscreen support having a tread surface with a coefficient of friction sufficiently low to allow negligible microscreen drum vibration yet permit microscreen drum slippage, and designed to withstand a significant edge



loading while causing minimal load transfer or imbalanced loads to the wheel hub and wheel supports, including:

a mounting bracked secured to said frame; and a pair of polymeric wheels rotatably mounted on said bracket, each of said wheels having a tread surface with a center portion and two sloping edge portions, two side faces and an axial bore designed to accept bearing means on each of said side faces,

wherein said polymeric wheels are provided with annular stress relief grooves cut into each face of said wheels to accommodate substantial edge loading originating from lateral shifting of said drum on said horizontal axis, without losing structural or rotational integrity.

4,620,928

PROCESS FOR REDUCING THE HYDROGEN SULFIDE CONTENT IN ANAEROBIC DECOMPOSITION PROCESSES, ESPECIALLY IN SLUDGE DIGESTION PROCESSES

Erich Gött, Lahr, Fed. Rep. of Germany, assignor to Wasserverband Raumschaft Lahr, Fed. Rep. of Germany

Filed Sep. 28, 1984, Ser. No. 655,728

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1983, 3335265

Int. Cl.⁴ C02F *3/28*; C12P *5/02*

U.S. Cl. 210—603 **5 Claims**

1. In a process for the anaerobic decomposition of sewage sludge, organically contaminated waste water or mixture thereof to form a fermentation gas containing methane as the primary component, the improvement which comprises: reducing the amount of hydrogen sulfide formed in the process by adding to the material to be anaerobically decomposed a sufficient amount of oxygen whereby the gas produced during the decomposition contains a residual oxygen content of 0.01 to 3.0% by volume.

4,620,929

PROCESS FOR THE REMOVAL OF PROTEIN AND DEGRADATION PRODUCTS THEREOF FROM WATER

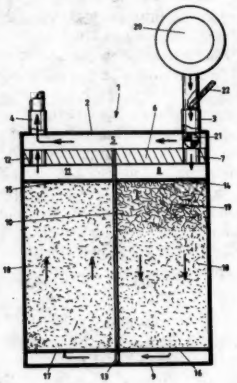
Hellmut G. Hofmann, Mönchsheide 5, 5063 Overath-Eulenthal, Fed. Rep. of Germany

Filed Dec. 13, 1984, Ser. No. 681,320

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1984, 3429691; Sep. 21, 1984, 3434678

Int. Cl.⁴ C02F *3/30*

U.S. Cl. 210—610 **11 Claims**



1. A process for removing protein and degradation products thereof from water, wherein a single filter material having a large contact area is flushed by the water to be purified, wherein the filter material used is an inert carrier containing bacteriophilic nutrients comprising a member of the group consisting of phthalic acid ester and compounds with phthalic acid esters, wherein the filter material releases the nutrients slowly, and an aerobic reaction zone and an anaerobic reaction zone are automatically set up in the filter material, the aerobic reaction zone and the anaerobic reaction zone comprising a single filter bed.

4,620,930

PROCESS FOR RAPIDLY DETERMINING BIOLOGICAL TOXICITY OF WASTEWATER

Curtis S. McDowell, Allentown, Pa., assignor to Polybac Corporation, Allentown, Pa.

Filed Dec. 16, 1985, Ser. No. 794,521

Int. Cl.⁴ C02F *3/12*; C12M *1/36*; G01N *33/18*; C12Q *1/18*

U.S. Cl. 210—614 **6 Claims**

1. In a process for determining the quality of a wastewater solution or a solution of a specific chemical which comprises mixing microorganisms with a test solution, measuring the dissolved oxygen content in the test solution, and correlating dissolved oxygen content of the mixture with a standard solution, the improvement for enhancing the sensitivity of the test while reducing the amount of time necessary to conduct a test which comprises:

a. utilizing a bacterial culture in the form of a dried powder, the bacterial culture being capable of aerobic biodegradation of organic wastes;

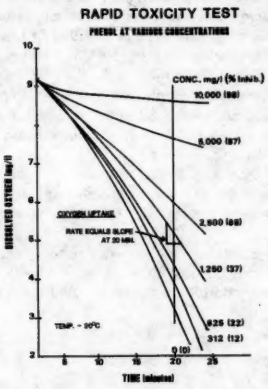
b. placing a preselected amount of said bacterial culture into a test vessel containing a preselected amount of aqueous waste which has been saturated with oxygen;

c. measuring the dissolved oxygen content in the test sample as a function of time;

d. determining the rate of dissolved oxygen decline at a preselected time, and,

e. determining the ratio between the rate of dissolved oxy-

gen decline at said preselected time and the rate of decline for a preselected baseline standard solution, and thereby



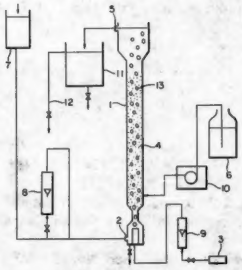
determining the degree of inhibition of bacterial respiration or growth.

4,620,931

THREE PHASE FLUIDIZED BED WATER PURIFYING PROCESS

Akira Hirata, Tokyo; Hajime Nagayama, Hino; Akinori Watanabe, Tokyo; Kouji Nitta, and Kenji Shimaji, both of Onoda, all of Japan, assignors to Waseda University, Tokyo and Onoda Cement Company, Ltd., Onoda, both of, Japan

Filed Sep. 11, 1985, Ser. No. 775,000
Claims priority, application Japan, Sep. 17, 1984, 59-192626
Int. Cl.[4] C02F *3/04*
U.S. Cl. 210—617 **5 Claims**



1. A three phase fluidized bed water purifying process comprising biologically purifying an effluent in a three phase fluidized bed composed of an effluent, a gas and solid carrier particles covered with microorganisms and said solid carrier particles being prepared by mixing a binder with an inorganic material based on aluminum silicate in an amount of 3–30% by weight of said binder based on the total weight of the binder and the inorganic material, granulating the resultant mixture, and then firing the resultant granules at a temperature between about 700° C. and about 1200° C. to sinter them, and form said carrier particles having a diameter of 0.1 to 5 mm and a specific density of 1.2 to 2.0.

4,620,932

SUBMICRONIC HYDROPHILIC FILTER MEDIA

Kenneth A. Howery, 34 Mayhew Dr., South Orange, N.J. 07079

Continuation-in-part of Ser. No. 501,095, Jun. 6, 1983, abandoned. This application Sep. 17, 1984, Ser. No. 651,513
Int. Cl.[4] B01D *39/16*
U.S. Cl. 210—808 **14 Claims**

13. A process for high volume filtration of fluids to remove submicronic size particulate therefrom, in the substantial absence of (1) added wetting agents and solvents, (2) added electrical charge enhancers, and (3) elevated pressure differentials, comprising passing said fluid at a rate of from about 10 to about 150 gallons per minute under a pressure of gravity to not more than about 30 pounds per square inch through at least one essentially one-piece construction submicronic filter medium which comprises a continuous matrix material having an initial micron rating of from about 1 to about 5 microns which is impregnated with a hydrophilic terpolymer by step-wise addition of a low viscosity terpolymeric polymerization mixture comprising from about 10% to about 14% by weight of a polymer, which includes at least one of alkylacrylate and alkylmethacrylate, and acrylic acid; from about 17% to about 22% by weight polyethyleneimine and urea solution; from about 7% to about 10% by weight ammonia; and from about 2% to about 6% by weight epoxy resin, said polymerization mixture having a solids content of from about 16% to about 20% by weight prior to polymerization, said step-wise addition comprising saturation of said matrix material with said terpolymeric mixture followed by compressing said saturated matrix material, and repeating said saturation and compressing at least one additional time, and drying said saturated matrix material, whereby said one-piece construction submicronic filter medium is formed.

4,620,933

DEFLECTING YOKE FOR ELECTROMAGNETIC DEFLECTION TYPE CATHODE-RAY TUBES AND METHOD FOR MANUFACTURING IT

Kumi Ochiai, Yokohama; Hiromichi Horie, Yokosuka; Itsuo Arima, Kawasaki, and Mikio Morita, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 8, 1985, Ser. No. 763,517
Claims priority, application Japan, Nov. 20, 1984, 59-243255
Int. Cl.[4] H01F *1/26*
U.S. Cl. 252—62.54 **14 Claims**

1. A deflecting yoke for an electromagnetic deflection type cathode-ray tube which comprises a compressively molded products consisting essentially of an iron powder or an iron-based alloy magnetic powder; an electrically insulating powdery resin; an organometallic coupling agent; and an electrically insulating powdery inorganic compound.

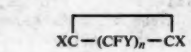
4,620,934

SOLUBLE FLUORINATED CYCLOALKANE SULFONATE SURFACTANT ADDITIVES FOR NH_4F/HF OXIDE ETCHANT SOLUTIONS

Ronald J. Hopkins, Orchard Park; Evan G. Thomas, East Aurora, and Harold J. Kieta, Buffalo, all of N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 604,112, Apr. 26, 1984, Pat. No. 4,517,106. This application May 13, 1985, Ser. No. 733,568
Int. Cl.[4] C09K *13/06*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 252—79.4 **10 Claims**

1. An etching solution containing a surfactant, which is stable against the precipitation of the surfactant, comprising an aqueous mixture of ammonium fluoride and surfactant that contains between 13.5 and 45 weight percent ammonium fluoride (NH_4F) and between 25 and 2000 ppm of a fluorinated sulfonate selected from the group consisting of cycloalkane sulfonate, fluorinated cycloalkene sulfonate of the formula:



wherein n has a value of up to 6, X may be F, Cl, H, OH, SO_3A or R and Y may be F, Cl, H, OH, R' or be a double bond and A may be H, NH^+, Na^+, K^+, Li^+, R''^+ or NR''_4^+ wherein R'' is a 1 to 4 carbon atom alkyl and/or fluoroalkyl group and mixtures thereof and the remainder being water.

4,620,935

ACTIVATION OF AQUEOUS HYDROGEN PEROXIDE WITH MANGANESE CATALYST AND ALKALINE EARTH METAL COMPOUND

Paul L. Baxter, Widnes; Iain S. MacKirdy, and Christopher T. Wright, both of Warrington, all of England, assignors to Interox Chemicals Limited, London, England

Filed Feb. 14, 1985, Ser. No. 701,750

Claims priority, application United Kingdom, Jun. 6, 1984, 8414488; Jan. 30, 1985, 8502375

Int. Cl.[4] C11D *3/395, 3/39, 7/18*

U.S. Cl. 252—99 **35 Claims**

1. A bleach or bleach additive composition comprising a catalyst composition consisting essentially of (a) a manganese compound and (b) at least an equimolar amount of soluble alkaline earth metal compound selected from soluble calcium, barium, or strontium compounds, and at least 20 moles of hydrogen peroxide or a persalt per mole of manganese.

4,620,936

MACHINE-DISHWASHING COMPOSITIONS

Hendrik S. Kielman, Maassluis, and Jan S. Bongers, Vlaardingen, both of Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Filed Aug. 6, 1984, Ser. No. 638,131

Claims priority, application United Kingdom, Aug. 15, 1983, 8321923

Int. Cl.[4] C11D *7/18, 7/42, 7/56*

U.S. Cl. 252—99 **9 Claims**

1. Detergent cleaning composition adapted for use in automatic dishwashing machines comprising:

(a) from 0.2 to 5% by weight of an amylolytic enzyme such that the final composition has amylolytic activity of from 10^3 to 10^6 Maltose Units/kg;

(b) from 25 to 50% by weight of sodium triphosphate;

(c) from 7.5 to 40% by weight of sodium carbonate and/or borax;

(d) from 2 to 15% by weight of sodium silicate, having SiO_2 : Na_2O ratio of from 1:1 to 4:1;

(e) from 5 to 25% by weight of a peroxy compound bleach selected from the group of solid peroxy acids and their salts; and mixtures of a solid hydrogen peroxide adduct with an activator wherein the ratio by weight of said hydrogen peroxide adduct to activator is within the range of from 8:1 to 1:1; and

(f) from 0.05 to 1% by weight of a stabilizing agent for the bleaching agent;

the amounts of components (b), (c) and (d) being so adjusted that the composition will have sufficient builder and buffering capacity to maintain a solution pH of from 9.3–10.8.

4,620,937

ALL PURPOSE CLEANER CONTAINING D-LIMONENE

Joseph Dellutri, 742 E. 85th St., Brooklyn, N.Y. 11236

Filed Feb. 11, 1985, Ser. No. 700,121

Int. Cl.[4] C11D *3/18, 3/20, 3/382, 3/43*

U.S. Cl. 252—143 **9 Claims**

1. A cleaning agent comprising:

a liquid mixture of distilled, stabilized citric oil, vinegar and water;

said distilled, stabilized citric oil being between 20% and 90% by volume of said mixture;

said distilled, stabilized citric oil including distilled D-Limonene, fatty acids, and a non-ionic detergent to add to and accelerate cleaning effect of said distilled D-Limonene;

said D-Limonene being at least 50% by volume of said distilled, stabilized citric oil;

said fatty acids including stearic and oleic acids to blend said distilled, stabilized citric oil together, said fatty acids being between 10% and 25% by volume of said distilled, stabilized citric oil;

said non-ionic detergent being between 10% and 25% by volume of said distilled, stabilized citric oil; and

said vinegar being approximately 0.11% by volume of said mixture.

7. A cleaning agent as in claim 1, wherein said mixture additionally includes Aloe Vera juice, said Aloe Vera juice being approximately 0.91% by volume of said mixture.

4,620,938

HYDROTERPHENYLS

Michael Römer, Rodgau; Joachim Krause; Rudolf Eidenschink, both of Dieburg, and Georg Weber, Erzhausen, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Continuation of Ser. No. 480,199, Mar. 30, 1983, abandoned. This application Apr. 5, 1985, Ser. No. 720,246

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1982, 3211601

Int. Cl.[4] G02F *1/13;* **C09K** *3/34;* **C07C** *13/28, 25/18, 39/17, 121/64, 43/21, 63/49, 69/96, 69/773, 121/75*

U.S. Cl. 252—299.63 **10 Claims**

1. A hydroterphenyl of the formula

$$R^1—Cy—Cy—Ph—R^2$$

wherein R^1 is alkyl; R^2 is $—COOR^3$ or $—O—CO—R^3$; R^3 is H, alkyl, —Cy-alkyl, —Ph-alkyl, —Ph—O-alkyl, —Ph—CN or —Ph—F; Cy is 1,4-cyclohexylene; Ph is 1,4-phenylene; and all alkyl groups each independently contain 1–10 C atoms.

4,620,939

SCINTILLATION CONVERTER FOR NEUTRON RADIOGRAPHY

Masahiko Maeda, Tokyo, and Naotochi Watanabe, Kanagawa, both of Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 4, 1985, Ser. No. 697,823

Claims priority, application Japan, Feb. 2, 1984, 59-16135; Sep. 19, 1984, 59-194765; Sep. 19, 1984, 59-194766; Oct. 4, 1984, 59-207044

Int. Cl.[4] C09K *11/06*

U.S. Cl. 252—301.17 **9 Claims**

1. A scintillation converter for neutron radiography comprising a composition formed of components

(A) 100 parts by weight of an olefin rubber made mainly of ethylene and propylene,

(B) from 100 to 400 parts by weight of at least one inorganic compound selected from the group consisting of inorganic boron compounds and inorganic lithium compounds, and

(C) from 100 to 600 parts by weight of a zinc sulfide-base fluorescent material.

4,620,940

PROCESS FOR MANUFACTURING SYNTHESIS GAS BY INDIRECT OXIDATION OF HYDROCARBONS

Dang Vu Quang, Paris; Claude Raimbault, Bailly; Régis Bonifay, Asnieres, and Jean-Francois Le Page, Rueil-Malmaison, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Mar. 8, 1985, Ser. No. 709,740

Claims priority, application France, Mar. 9, 1984, 84 03791

Int. Cl.[4] C01B *3/36*

U.S. Cl. 252—373 **10 Claims**

1. A process for manufacturing a synthesis gas containing hydrogen and carbon oxides, from a hydrocarbons charge, water, free oxygen and a transfer gas containing at least 25% by volume of steam and at least 2% by volume of at least one of carbon monoxide or carbon dioxide, comprising the steps of:

passing the transfer gas through a succession of at least two essentially adiabatic catalyst beds, and

introducing alternately at each of the successive inputs of each catalyst bed either a fraction of the hydrocarbon charge or a fraction of oxygen flow, provided that the transfer gas which receives oxygen does not contain more than 25% by volume of methane and 5% by volume of higher hydrocarbons at the point of oxygen introduction, that the oxygen amount introduced at each catalyst bed input is lower than the amount of oxygen that would form an explosive mixture with the transfer gas, such that each oxygen fraction corresponds to an oxygen portion by volume in the mixture with the transfer gas lower than the value L, wherein:

$$L = \frac{100}{\frac{PH_2}{NH_2} + \frac{PCO}{NCO} + \frac{PCH_4}{NCH_4}}$$

wherein PH_2, PCO and PCH_4 are respectively the hydrogen, carbon monoxide and methane proportions, so that $PH_2+PCO+PCH_4=100$ and NH_2, NCO and NCH_4 are the explosiveness concentration limits of hydrogen, carbon monoxide and methane in pure oxygen, and are 4.65, 15.50 and 5.15% by volume of pure oxygen respectively, with the further proviso that the transfer gas which must receive the hydrocarbons does not contain more than 1,000 parts per million by volume of free oxygen at the point of hydrocarbons introduction.

4,620,941

THERMOCHROMIC COMPOSITIONS

Kimio Yoshikawa, Osaka; Hidetoshi Fukuo, Takarazuka, and Juzo Kuroda, Yamatokoriyama, all of Japan, assignors to Sakura Color Products Corporation, Osaka, Japan

Filed Oct. 29, 1984, Ser. No. 666,175

Claims priority, application Japan, Nov. 4, 1983, 58-208022; Jan. 20, 1984, 59-9352; Mar. 2, 1984, 59-41009

Int. Cl.[4] G01N *31/22*

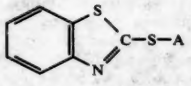
U.S. Cl. 252—408.1 **4 Claims**

1. A thermochromic composition comprising:

(i) at least one electron-donating organic chromogenic compound,

(ii) at least one compound serving as a color developing material and selected from guanidine and derivatives thereof, benzothiazole, and benzothiazolyl derivatives represented by the formula

(I)



or

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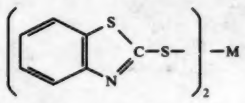
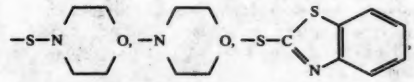
(II)



wherein A is —H,



$-NR_2$, $-H{\cdot}NR_3$ or $-CSNR_2$ in which R is H, C_1–C_{10} alkyl, benzyl optionally substituted with C_1–C_6 alkyl or cyclohexyl optionally substituted with C_1–C_6 alkyl, with the proviso that all of R in $-NR_2$, $-H{\cdot}NR_3$ and $-CSNR_2$ can not be H, and M is Cu, Zn, Fe, Ni, Co or Te, and

(iii) at least one compound serving as a desensitizer and selected from the group consisting of alcohols, esters, ketones, ethers, acid amides, carboxylic acids and hydrocarbons.

4,620,942

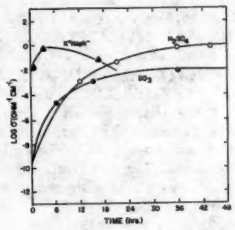
ELECTRICALLY CONDUCTIVE LADDER POLYMERS

Oh-Kil Kim, Burke, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 31, 1983, Ser. No. 499,710

Int. Cl.[4] C08G *73/00, 73/10*

U.S. Cl. 252—500 **20 Claims**



1. A benzimidazobenzophenanthroline ladder polymer, said polymer having been doped with at least an effective amount of a dopant chosen from the group consisting of Lewis acids, protonic acids, potassium metal, and an alkali napthalide while said polymer was in film or fiber form, said effective amount of dopant rendering said polymer electrically conductive.

4,620,943

BICARBAZOLE-OXADIAZOLE ELECTROACTIVE POLYMERS

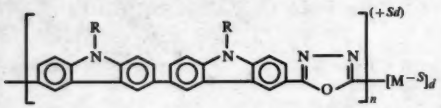
Peter Denisevich, Jr., Fairfax; Albert H. Schroeder, Richmond; Victor P. Kurkov, San Rafael, and Shigeto Suzuki, San Francisco, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Oct. 25, 1984, Ser. No. 664,830

Int. Cl.[4] H01B *1/12*

U.S. Cl. 252—518 **12 Claims**

6. A tractable electroactive polymer which comprises a charged polymer backbone and charge-compensating ionic dopants associated therewith of the formula:



wherein R is lower alkyl of 1 to 6 carbon atoms or phenyl; n is an integer from 2 to 1,000; d is an integer from 1 to 2,000; S is an integer from 1 to 3; and M is a charge-compensating ionic dopant of opposite electrical charge to the charge of the polymer backbone; wherein the polymer backbone is capable of undergoing reversible oxidation to form the charged polymer backbone.

4,620,944

MACROMOLECULAR MATERIAL OF IONIC CONDUCTION FOR PRODUCING ELECTROLYTES OR ELECTRODES

Michel Armand, Echirolles; Daniel Muller, and Jean-Michel Chabagno, both of Pau, all of France, assignors to Societe Nationale Elf Aquitaine, Courbevoie, France and Hydro-Quebec, Quebec, Canada

Filed May 29, 1985, Ser. No. 739,057
Claims priority, application France, May 29, 1984, 84 08417
Int. Cl.[4] H01B *1/06*
U.S. Cl. 252—518 **13 Claims**

1. An ionically conductive material comprised of a salt in solution in a macromolecular material, said macromolecular material comprising at least two polyether chains connected to each other via an atomic bridge, said atomic bridge being at least one member selected from the group consisting of silicon, cadmium, boron and titanium atoms.

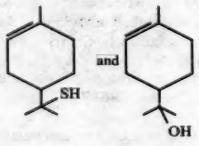
4,620,945

MIXTURES OF ONE OR MORE T-MERCAPTO TERPENE ISOMERS AND α-TERPINEOL, β-PHENYLETHYL ALCOHOL, 3-METHYL-1-PHENYL-PENTANOL-5 AND/OR BUTANOYL CYCLOHEXANE DERIVATIVES, ORGANOLEPTIC USES THEREOF AND PROCESS FOR PREPARING SAME

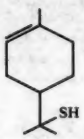
Braja D. Mookherjee, Holmdel, N.J.; Bernard J. Chant, Rye, N.Y.; William J. Evers, Locust, N.J.; Richard A. Wilson, Westfield, N.J.; Michael J. Zampino, North Bergen, N.J., and Manfred H. Vock, Locust, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 519,371, Aug. 1, 1983, Pat. No. 4,536,583. This application Aug. 24, 1984, Ser. No. 644,053
Int. Cl.[4] A61K *7/46;* **C11B** *9/00*
U.S. Cl. 252—522 R **6 Claims**

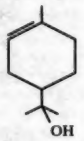
1. A process for augmenting or enhancing the aroma or taste of a consumable material selected from the group consisting of perfume compositions, perfumed articles, colognes, foodstuffs, chewing gums, medicinal products and toothpastes comprising the step of adding to said consumable material an aroma or taste augmenting or enhancing quantity of a composition of matter including as a major proportion, a mixture of compounds having the structures:



with the mole ratio range of compound having the structure:

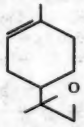


to compound having the structure:

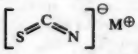


being from 0.8 up to 0.9:0.1 up to 0.2, produced according to the process comprising the steps of:

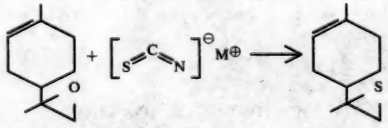
(i) reacting the compound having the structure:



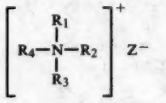
with an alkali metal thiocyanate having the structure:



according to the reaction:



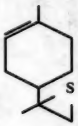
wherein M represents alkali metal in the presence of a phase transfer catalyst, said phase transfer catalyst having the general formula:



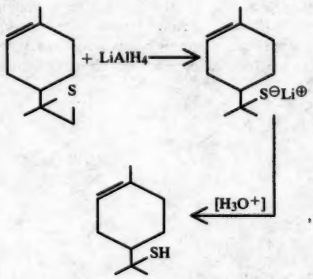
wherein at least one of R_1, R_2, R_3 and R_4 is C_6–C_{14} aryl, C_6–C_{10} aralkyl, C_6–C_{20} alkyl, C_6–C_{14} alkaryl and C_6–C_{20} alkenyl and the other of R_2, R_3 and R_4 is alkyl selected from the group consisting of methyl, ethyl, n-propyl, i-propyl, 1-butyl, 2-butyl, 1-methyl-2-propyl, 1-pentyl and 1-octyl and Z^- is an anion selected from the group consisting of chloride, bromide and hydroxide, the reaction temperature varying from about 45° C. up to about 85° C.; the pressure of reaction varying from one atmosphere up to 10 atmospheres; the mole ratio of alkali metal thiocyanate:epoxide varying from about 8:1 down to about

1:1; the said alkali metal thiocyanate being dissolved in water with the alkali metal thiocyanate being in a concentration of between 10% and 50% in said water;

(ii) reacting the resulting product containing a major proportion of the compound defined according to the structure:



with lithium aluminum hydride to form a lithium salt and then hydrolyzing said lithium salt with mineral acid according to the reaction sequence:



the reaction taking place at a temperature in the range of 25°–36° C. in the presence of a tetrahydrofuran solvent; and

(iii) recovering the resulting reaction product by fractional distillation at a vapor temperature in the range of 45°–58° C. and a pressure of 0.33–0.35 mm/Hg.

4,620,946

COMPOSITIONS BASED ON 1,1,2-TRICHLOROTRIFLUOROETHANE FOR INDUSTRIAL WASHING

Gianangelo Bargigia, Milan, and Mauro Scapin, Busto Arsizio, both of Italy, assignors to Montefluos S.p.A., Milan, Italy

Filed Mar. 5, 1985, Ser. No. 708,576
Claims priority, application Italy, Mar. 7, 1984, 19925 A/84
Int. Cl.⁴ C11D *1/22, 7/30, 7/50*
U.S. Cl. 252—545 **8 Claims**

1. Compositions suitable to be used for industrial washing, comprising by weight:

(a) from 63% to 99% of 1,1,2-trichloro-1,2,2-trifluoroethane;

(b) from 0.5% to 25% of water;

(c) from 0.5% to 12%, of a mixture consisting of 80%–97% by weight of at least a compound having formula:

$$R—C_6H_5—SO_3H.A \quad (I)$$

wherein R is a linear or branched alkyl group having from 9 to 15 carbon atoms and A is a primary, secondary or tertiary, linear or branched, aliphatic or cyclic amine having from 2 to 8 carbon atoms and, 3%–20% by weight, of at least a compound having formula:

$$X—(CO)_n—OH \quad (II)$$

wherein n is 1 or zero and wherein X is a linear, branched or cyclic alkyl or alkyenyl group containing from 6 to 25 carbon atoms.

4,620,947

SOLIDIFICATION OF AQUEOUS RADIOACTIVE WASTE USING INSOLUBLE COMPOUNDS OF MAGNESIUM OXIDE

John E. Carlson, Statesboro, Ga., assignor to Chem-Nuclear Systems, Inc., Columbia, S.C.

Filed Oct. 17, 1983, Ser. No. 555,461
Int. Cl.⁴ G21F *9/16*
U.S. Cl. 252—628 **11 Claims**

9. A process for the treatment of radioactive waste which comprises:

(a) first adding, under continuous agitation, a sufficient amount of a powdered magnesium oxide or magnesium hydroxide to an aqueous radioactive waste solution containing boric acid, the temperature of the water solution being 55–95 degrees C. to produce a magnesium borate derivative;

(b) adding cement, under continuous agitation, to the magnesium borate derivative; and

(c) then adding, under continuous agitation, after the cement has been dispersed, a sufficient amount of a compound selected from the group consisting of calcium oxide and calcium hydroxide to b) to produce a gel matrix structure.

4,620,948

PURIFICATION AND ACTIVITY ASSURANCE OF PRECIPITATED HETEROLOGOUS PROTEINS

Stuart E. Builder, Belmont, and John R. Ogez, San Mateo, both of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Continuation of Ser. No. 452,344, Dec. 22, 1984. This application Jun. 1, 1984, Ser. No. 615,681
Int. Cl.⁴ C08G *3/12*
U.S. Cl. 530—419 **16 Claims**

1. A process for isolating, purifying and reactivating heterologous proteins which are precipitated as refractile bodies in host cells, which process comprises:

(a) treating the host cell culture with a buffered solution of ionic strength suitable to solubilize protein but in which refractile heterologous protein is substantially insoluble and disrupting the cells, to form a supernatant and an insoluble fraction;

(b) treating the insoluble fraction from step (a) with a strongly denaturing solution containing a reducing agent to solubilize the refractile heterologous protein;

(c) replacing the strongly denaturing solution with a weakly denaturing solution containing a reducing agent; and

(d) reactivating the solubilized protein by removing most or all of the weak denaturant and reducing agent in the presence of air, to produce active heterologous protein.

4,620,949

PROCESS FOR AMIDOCARBONYLATION OF CYCLIC AMIDES

Jiang-Jen Lin, Round Rock, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Apr. 5, 1985, Ser. No. 720,229
Int. Cl.⁴ C07D *401/06, 403/06, 223/10*
U.S. Cl. 540—525 **15 Claims**

1. A process for producing cyclic-amido acetic acid derivatives which comprises reacting a C_4 to C_6 cyclic amide, an aldehyde comprising formaldehyde or paraformaldehyde and synthesis gas with a bimetallic catalyst comprising a rhodium-containing compound and a cobalt-containing compound in a solvent at a pressure of at least 500 psi and a temperature of at least 50° C.

4,620,950

PROCESS FOR PREPARING ARYL SULFONE SULFONIC ACIDS

Charles V. Hedges, Mt. Vernon, and Victor Mark, Evansville, both of Ind., assignors to General Electric Company, Mt. Vernon, Ind.

Continuation of Ser. No. 154,837, May 30, 1980, abandoned, which is a continuation of Ser. No. 745,638, Nov. 29, 1976, abandoned. This application Sep. 11, 1981, Ser. No. 301,396

Int. Cl.[4] C07C *143/24*

U.S. Cl. 260—505 R 3 Claims

1. A process for sulfonating diphenyl sulfone which comprises contacting diphenyl sulfone in its molten state with a sulfonating agent consisting essentially of sulfur trioxide under substantially anhydrous conditions in the absence of a solvent.

4,620,951

SLIDABLE THROTTLE VALVE ASSEMBLY FOR A CARBURETOR AND ASSOCIATED METHOD OF OPERATION

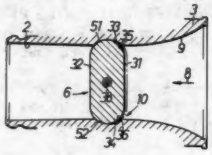
Tomoaki Makino, Asaka; Masahiro Arakawa, Niiza, and Tomiyoshi Mitsui, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 23, 1985, Ser. No. 737,147

Claims priority, application Japan, Aug. 28, 1984, 59-178872

Int. Cl.[4] F02M *9/06*

U.S. Cl. 261—44.3 11 Claims



1. In a slidable throttle valve assembly for a carburetor having a carburetor body with an intake passage therein; a slidable throttle valve guide tube connected to said carburetor body and guidably supporting said slidable throttle valve, said carburetor body having guide grooves for guiding said slidable throttle valve, said guide grooves being respectively provided in said body at opposite sides of said intake passage so as to be continuous with said throttle valve guide tube, the improvement wherein said throttle valve and said guide grooves are so shaped that said throttle valve and said guide grooves come into contact with each other respectively along lines extending in the sliding direction of said slidable throttle valve at downstream portions of said throttle valve, said throttle valve and guide grooves having a slight difference in curvature of respective surfaces adjacent their lines of contact during operation.

4,620,952

GAS LIQUID CONTACT TRAY AND METHOD

Chang-Li Hsieh, Billerica, Mass., assignor to Koch Engineering Company, Inc., Wichita, Kans.

Filed Oct. 15, 1985, Ser. No. 787,164

Int. Cl.[4] B01F *3/04*

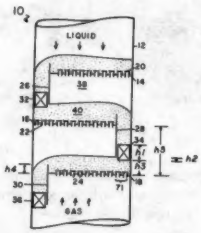
U.S. Cl. 261—114 R 20 Claims

1. A gas liquid contact tray for use in a gas liquid contacting column for use in high liquid-loading operations, which tray comprises:

(a) a tray-deck means having openings, to provide for a liquid level on the tray deck and for the intimate contact of an upwardly flowing gas stream through the openings, with liquid on the tray deck;

(b) a downcomer means having an inlet and an outlet, to provide a passageway for the transportation of liquid from the tray deck to a lower section of the column in which the tray is to be installed, the liquid from the tray deck passing through the passageway in the downcomer means; and

(c) a mass-transfer packing material means within the passageway of the downcomer means, to provide for the intimate gas liquid contact in at least a portion of the



passageway of the upwardly flowing gas stream and the downwardly flowing liquid stream in the downcomer from the upper tray, thereby providing a tray characterized by high tray efficiency and capacity and a wide turndown ratio.

4,620,953

DEVICE FOR PREPARING FOAMY MILK

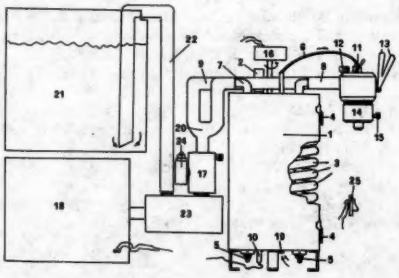
Martini Silla, Via Bassanese, 25, 31037 Loria (TV), and Mario Chiaro, Via dei Salici, 16, 31033 Castelfranco Veneto (TV), both of Italy

Filed Jan. 8, 1985, Ser. No. 689,640

Claims priority, application Italy, Mar. 8, 1984, 47823 A/84

Int. Cl.[4] B01F *3/04*

U.S. Cl. 261—142 10 Claims



1. A device for preparing foamy milk, comprising: a cold milk container, means for pumping milk from said container through unidirectional valve means to a heat exchanger adapted to raise the temperature of the milk, means to conduct heated milk from the heat exchanger to adjustable-gap venturi means adapted to mix air with the heated milk, turbulence producing means located downstream of said venturi means to further mix the milk and air, and operator controlled discharge means for controlling discharge of the aerated milk.

4,620,954

HYDROGEL FROM ULTRAVIOLET-INITIATED COPOLYMERIZATION

Helmut Singer, Northboro; Ellen Bellantoni, Natick, both of Mass., and Albert R. LeBoeuf, San Diego, Calif., assignors to CIBA Vision Care Corp., Atlanta, Ga.

Filed Jun. 7, 1985, Ser. No. 742,545
Int. Cl.[4] C08J 3/00
U.S. Cl. 264—1.4 13 Claims

1. A method for preparing a contact lens hydrogel comprising preparing a mixture consisting essentially of an N-vinyl lactam monomer, a hydrophobic acrylate comonomer, and active quantities of a crosslinking agent, a photoinitiator and a thermal initiator effective at elevated temperature, the initiators being added while the mixture is maintained at a temperature below room temperature, casting the mixture into a lens mold while protecting it from heat or ambient illumination sufficient to initiate polymerization, irradiating the cast mixture with ultraviolet illumination sufficient to substantially polymerize the monomer mixture, and heating the mixture in the mold to cure the copolymer.

4,620,955

POLYETHYLENE MICROPOROUS MEMBRANE AND A PROCESS FOR THE PRODUCTION OF THE SAME

Koichi Kono; Shoichi Mori; Kenji Miyasaka, and Jyoichi Tabuchi, all of Saitama, Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 728,806, Apr. 29, 1985. This application Feb. 25, 1986, Ser. No. 832,752
Claims priority, application Japan, Apr. 27, 1984, 59-83872
Int. Cl.[4] B29C 27/60
U.S. Cl. 264—41 13 Claims

1. A process for the production of a polyethylene microporous membrane having a thickness of at most 10 μm, a breaking strength of at least 200 kg/cm^2 and a porosity of at least 30%, which comprises heating and dissolving polyethylene having a weight average molecular weight of at least 5×10^5 in a solvent, forming a gel sheet from the resulting solution, subjecting the gel sheet to a solvent removal treatment to adjust the amount of the solvent removal treatment to adjust the amount of the solvent in the gel sheet to 10 to 80% by weight, heating and stretching the sheet and then removing the residual solvent therefrom.

4,620,956

PROCESS FOR PREPARING MICROPOROUS POLYETHYLENE FILM BY UNIAXIAL COLD AND HOT STRETCHING

Edward A. G. Hamer, Metuchen, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Jul. 19, 1985, Ser. No. 756,527
Int. Cl.[4] B28B 11/16
U.S. Cl. 264—145 18 Claims

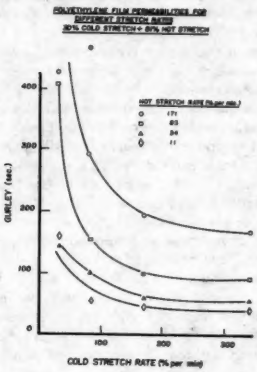
1. A process for producing a microporous polyethylene film, comprising:

(a) melt extruding at a drawdown ratio of about 20:1 to about 200:1 a polyethylene resin having a density of at least approximately 0.960 gm./cm.^{3} and having at least 99% by weight ethylene to form an extruded precursor film;

(b) annealing said extruded precursor film at a temperature in the range of from about 10° C. to about 25° C. less than the crystalline melting point of said resin so as to improve the crystallinity of the extruded precursor film and so as to form an unstretched annealed precursor film;

(c) uniaxially cold stretching said annealed precursor film at a temperature in the range of from about −20° C. to about 70° C., and at a cold stretching rate of at least 75 percent per minute, based on the length of the unstretched annealed precursor film, to achieve a cold stretched length of from about 120 percent to about 160 percent, said cold stretched length being based on the length of said unstretched annealed precursor film, to form a cold stretched precursor film;

(d) hot stretching said cold stretched precursor film, in the same uniaxial direction as said cold stretching, at a temperature in the range of from above the temperature in (c) to a temperature in the range of from about 10° C. to about 25° C. less than the crystalline melting point of the resin so



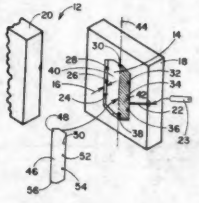
as to maintain the crystallinity of the cold stretched precursor film, and at a hot stretching rate of less than 75 percent per minute, based on the length of said unstretched annealed precursor film, to achieve a hot stretched length of from about 235 percent to about 310 percent, said hot stretched length being based on the length of said unstretched annealed precursor film, so as to form a microporous polyethylene film.

4,620,957

PROCESS FOR MANUFACTURING OPTICALLY CLEAR TWO-COLORED OBJECTS

Frederick L. Horton, Jr., 4510 Elkin Ave., Nashville, Tenn. 37209

Continuation of Ser. No. 526,601, Aug. 26, 1983, abandoned. This application Aug. 9, 1985, Ser. No. 764,510
Int. Cl.[4] B29C 45/14, 45/16
U.S. Cl. 264—247 9 Claims



1. A process for manufacturing a substantially flat optically transparent face shield of a selected size, shape and having a front surface substantially parallel to a back surface, said face shield sufficiently flexible for attaching to protective head gear and having a first distinct portion which is substantially colorless and a second distinct portion which is of a selected color, said process comprising the steps of:

providing a thin flat injection molding cavity of substantially said size, shape and a known thickness of between 0.045 and 0.120 inches between first and second substantially

parallel surfaces of said cavity, for receiving a body material selected from the group consisting of Cellulose Propionate and Cellulose Butyrate under a selected temperature and pressure for molding said face shield and wherein said cavity may be selectively opened and closed;

opening said cavity;

securing a transparent sheet of the same material as said body material, and having substantially said selected color, and having a thickness of between 0.006 inches and 0.015 inchdes, and a shape substantially the same as the shape of said second distinct portion of said cavity at a location in said cavity corresponding to said second distinct portion;

closing said cavity;

injecting a quantity of said body material at said selected temperature and pressure into said cavity sufficient to fill said cavity and to form said face shield having said substantially parallel front and back surfaces, said body material having characteristics such that when injected into said cavity at said temperature and pressure, said first portion of said face shield is formed from said body material to be colorless and optically transparent, and said second distinct portion of said face shield is formed to one or both surfaces of said sheet of material such that by clearly, smoothly, and completely bonding said body material said sheet of material is not destroyed, wrinkled, or harmed and said second distinct portion is optically transparent without distortion and with said selected color, such that a user may use said colored second distinct portion as a sun or light filter; and

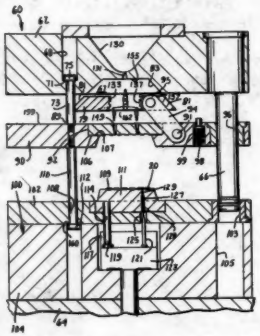
opening said cavity and removing said face shield.

4,620,958

METHODS OF AND APPARATUS FOR MOLDING ARTICLES THROUGH A BALANCED, REMOVABLE RUNNER SYSTEM

Charles A. Wiechard, Tucker, Ga., assignor to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Sep. 28, 1984, Ser. No. 655,655
Int. Cl.[4] B29C *45/03, 45/27*
U.S. Cl. 264—297.2 **16 Claims**



2. A method of molding a plurality of articles through a balanced distribution system, said method including the steps of:

flowing an injection molding material into an infeed channel;

distributing the injection molding material from the infeed channel through a primary runner channel system which is disposed along a single vertical plane to a plurality of locations which are spaced equidistantly from the infeed channel;

guiding the injection molding material from the locations through a secondary runner channel system into each of a plurality of cavities having a contour of the articles to be molded and being spaced equidistantly from the locations;

causing the injection molding material to solidify;

causing the solidified injection molding material in the secondary runner channel system to be separated from that in the cavities;

separating surfaces which define the cavities by causing relative movement between the surfaces in a direction parallel to the plane to facilitate removal of the articles from the cavities; and

separating surfaces which define at least the primary runner channel system by causing relative movement therebetween in a direction transverse to the plane, and moving surfaces which define at least a portion of the secondary runner channel system in a direction parallel to the plane to facilitate removal of the solidified injection molding material from the runner channel systems.

7. An apparatus for molding a plurality of articles disposed at least in one longitudinal array with a balanced, removable runner system, said apparatus comprising:

supply means including an infeed channel for feeding an injection molding material;

means including adjacent surfaces which extend along a plane and which define a runner channel system for distributing an injection molding material from the infeed channel to a plurality of locations which are spaced equidistantly from the infeed channel;

channel means for guiding the injection molding material from the locations into each of a plurality of cavities having the contour of the articles to be molded and being spaced equidistantly from the infeed channel;

means for causing the injection molding material to be solidified;

means for causing the solidified injection molding material in said channel means to be separated from that in the cavities;

means for separating surfaces which define the cavities by causing relative movement therebetween in a direction parallel to the plane to facilitate removal of the articles from the cavities; and

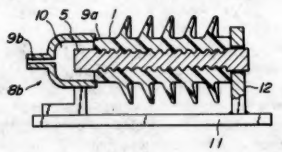
means for separating surfaces which define the runner channel system by causing relative movement therebetween in a direction transversely of the plane to facilitate removal of the solidified injection molding material in the runner channel system.

4,620,959

METHOD OF RELEASING AN INNER MOLD FROM A RUBBERY ELASTIC MOLDING

Daisaku Goto, Konan; Hikoharu Sugimoto, Kasugai, and Nobuyuki Kato, Iwakura, all of Japan, assignors to NGK Insulators, Ltd., Japan

Continuation of Ser. No. 579,505, Feb. 13, 1984, abandoned.
This application Dec. 12, 1985, Ser. No. 807,213
Claims priority, application Japan, Feb. 25, 1983, 58-29278
Int. Cl.[4] B29C *41/42*
U.S. Cl. 264—335 **5 Claims**



1. A method of releasing an inner mold from a rubbery elastic molding for an insulator or an insulating tube in which a rubbery elastic material is cure-molded between the inner mold, having a corrugated outer surface, and an outer mold for

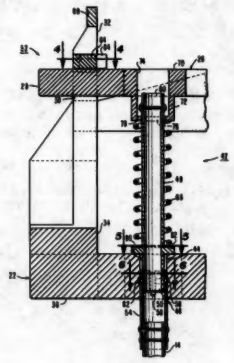
a sheath, wherein the inner mold is released from the cured molding, said method comprising the steps of disassembling the outer mold; attaching a mold-releasing means to said elastic molding, said mold-releasing means comprising a cup-shaped high pressure chamber and a holding member, said cup-shaped high pressure chamber contacting a first axial end of said rubbery elastic molding to form a sealing surface, and said holding member contacting an opposite axial end of said rubbery elastic molding; compressing the rubbery elastic molding longitudinally between the sealing surface and the holding member, thereby forming a partial space between the rubbery elastic molding and the inner mold at one of said first axial end and said opposite axial end of the rubbery elastic molding, communicating a pressurized medium source with said high pressure chamber and said partial space, thereby forcibly introducing said pressurized medium into an interface between the rubbery elastic molding and the inner mold through said partial space to expand an inner cavity of the rubbery elastic molding in a radial direction and form a space between the rubbery elastic molding and the inner mold over substantially an entire longitudinal area therebetween; whereby the inner mold is thereafter extracted axially from the rubbery elastic molding by mechanically sliding said inner mold relative to said rubbery elastic molding, while said inner cavity is radially expanded.

4,620,960

METHOD AND APPARATUS FOR REMOVABLY MOUNTING A TOP NOZZLE ON A NUCLEAR REACTOR FUEL ASSEMBLY

John F. Wilson, Murrysville; Robert K. Gjertsen, Monroeville, and John M. Shallenberger, Fox Chapel, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 27, 1984, Ser. No. 644,756
Int. Cl.[4] G21C *3/32*
U.S. Cl. 376—446 **14 Claims**



1. In a fuel assembly having a top nozzle and a plurality of control rod guide thimbles, a method of removably mounting the top nozzle on the ends of the guide thimbles, comprising the steps of:

(a) releasably mating a plurality of hollow outer sockets defined in said top nozzle with a plurality of hollow inner sockets defined on said ends of said guide thimbles, said inner sockets being movable between compressed conditions for removing and inserting said inner sockets from and into said outer sockets in mounting and removing said top nozzle on and from said guide thimbles and expanded conditions for mating said inner and outer sockets together and said top nozzle on said guide thimbles;

(b) supporting a plurality of elongated locking tubes such that end portions thereof extend into said outer sockets defined in said top nozzle; and

(c) moving all of said locking tubes at the same time between unlocking and locking positions to displace their end portions axially within said outer sockets between first locations where said locking tubes allow said inner sockets to be moved between compressed and expanded conditions to remove and insert said inner sockets from and into said outer sockets and thereby mount and remove said top nozzle on and from said guide thimbles, and second locations where said locking tubes retain said inner sockets in expanded conditions to prevent removal of said inner sockets from said outer sockets and thereby removal of said top nozzle from said guide thimbles.

4,620,961

ALUMINUM ALLOY HAVING A HIGH ELECTRICAL RESISTANCE AND AN EXCELLENT FORMABILITY

Yoshio Baba; Teruo Uno; Hideo Yoshida, and Yoshifusa Shoji, all of Nagoya, Japan, assignors to Sumitomo Light Metal Industries, Ltd., Tokyo, Japan

Filed Jun. 18, 1984, Ser. No. 621,592
Claims priority, application Japan, Sep. 16, 1983, 58-169217
Int. Cl.[4] C22C *21/06*
U.S. Cl. 420—542 **7 Claims**

1. A manganese-free, aluminum alloy having a high electrical resistance and an excellent formability and suitable for use in nuclear reactors, said aluminum alloy consisting essentially of, in weight percentages:

Mg: from 1.0 to 8.0%,
Li: from 0.05 to less than 1.0%,
Bi: from 0.05 to 0.50%

at least one element selected from the group consisting of, in weight percentages:

Ti: from 0.05 to 0.02%
Cr: from 0.05 to 0.40%
Zr: from 0.05% to 0.30%
V: from 0.05 to 0.35%
W: from 0.05 to 0.30%, and

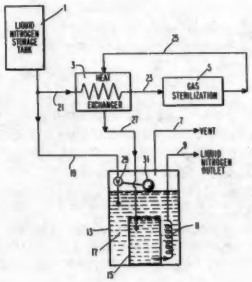
the balance being aluminum and incidental impurities.

4,620,962

METHOD AND APPARATUS FOR PROVIDING STERILIZED CRYOGENIC LIQUIDS

Howard D. Brodbeck, Berwyn, Pa., assignor to MG Industries, Valley Forge, Pa.

Filed Mar. 4, 1985, Ser. No. 700,826
Int. Cl.[4] A61L *2/10*
U.S. Cl. 422—24 **25 Claims**



1. Apparatus for providing a sterilized cryogenic liquid, comprising:

(a) inlet conduit means, connectable to a source of cryogenic liquid, for providing a cryogenic liquid,

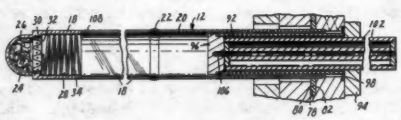
(b) means for vaporizing the cryogenic liquid, the vaporizing means being connected to the inlet conduit means,
(c) means for sterilizing the vaporized cryogenic liquid, the sterilizing means being connected to the vaporizing means,
(d) means for reliquefying and subcooling the sterilized vaporized cryogenic liquid, the reliquefying and subcooling means being in flow communication with the sterilization means, and
(e) outlet conduit means, in flow communication with the reliquefying and subcooling means, for withdrawing sterilized liquid cryogen from the apparatus.

4,620,963

VAPOR TRANSPORT REACTOR WITH COMPOSITE METAL-GLASS TUBE

Mark K. Debe, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 19, 1985, Ser. No. 702,671
Int. Cl.[4] C30B *23/00*
U.S. Cl. 422—240 **12 Claims**



1. A vapor transport reactor comprising:
a composite reaction tube having a closed containment end and an open end, said composite tube including a metal tube providing said open end and a coaxial transparent glass tube providing said closed containment end, said metal tube and said glass tube being joined intermediate said opened and closed ends;
a source material contained within said reaction tube and disposed at said closed end;
means for heating said reaction tube in the region of said source material to a temperature in excess of the vaporization temperature of said source material at the pressure with said reaction tube to thereby produce a vapor of said source material within said reaction tube;
a platen disposed within said reaction tube between said open and said closed ends and exposed to said source material vapor for the deposition of crystallized source material;
means for cooling said platen below the crystallization temperature at the pressure within said reaction tube to cause said deposition of crystallized source material on said platen; and
means for demountably sealing said open end of said reaction tube to contain said source material vapor within said reaction tube and permit the recovery of said crystallized source material.

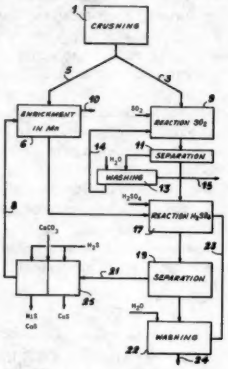
4,620,964

PROCESS FOR THE TREATMENT OF COMPLEX MANGANESE ORES, SUCH AS MARINE NODULES

Odile Pinto, Neudon, and Henri Scoazec, Gif sur Yvette, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jun. 6, 1985, Ser. No. 742,003
Claims priority, application France, Jun. 7, 1984, 84 08924
Int. Cl.[4] C01G *3/12, 51/00, 53/11*
U.S. Cl. 423—27 **20 Claims**

1. A process for the treatment of a complex manganese ore, wherein it comprises the following stages;
(a) crushing the ore,
(b) subdividing the crushed ore into a first part and a second part,
(c) preparing a first pulp from the first part of the crushed ore,
(d) reacting the first pulp with a reducing agent to obtain a manganous sulphate solution,
(e) separating the liquid phase constituted by the thus obtained manganous sulphate solution from the solid phase of the thus treated first pulp,
(f) preparing a second pulp from the second part of the crushed ore,



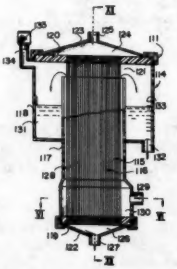
(g) subjecting the second pulp to a solubilization treatment of the nickel, copper and cobalt by reacting it at a temperature of from 100° to 250° C. at a pressure of 7 to 40 bars with sulphuric acid and the manganous sulphate solution obtained in stage (e),
(h) separating the liquid phase and the solid phase of the thus treated second pulp, and
(i) recovering the nickel, copper and cobalt from the liquid phase separated in stage (h).

4,620,965

HOLLOW FIBER-TYPE ARTIFICIAL LUNG

Hiromichi Fukusawa, Funabashi, and Takashi Monzen, Tama, both of Japan, assignors to Terumo Corporation, Tokyo, Japan

Filed Sep. 16, 1983, Ser. No. 533,496
Claims priority, application Japan, Sep. 22, 1982, 57-163975; Sep. 29, 1982, 57-168407; Oct. 12, 1982, 57-177506
Int. Cl.[4] A61M *1/03*
U.S. Cl. 422—46 **24 Claims**



14. A hollow fiber-type artificial lung, comprising:
an axially extended housing;
a hollow fiber bundle including a multiplicity of hollow fibers accommodated within and along the axial direction

of said housing, said hollow fibers forming blood channels between outer wall surfaces of neighboring ones thereof, and being arranged within said housing in such a manner that neighboring blood channels are brought into substantial communication;

first and second walls liquid-tightly supporting said hollow fibers at both end portions thereof within said housing;

said first and second walls, the inner wall of said housing and the outer wall surfaces of said hollow fibers defining a blood chamber;

blood inlet means provided in a side wall of said housing in the vicinity of said first wall and having an opening communicating with said blood chamber;

the inner surface of said housing in the vicinity of said blood inlet means being flared outwardly relative to the inner surface of the intermediate portion of the housing, for forming a first annular blood flow passage in said blood chamber at a portion adjacent to said first wall between the outer periphery of said hollow fiber bundle and the inner surface of the flared housing, wherein the flared inner surface of said housing in the vicinity of said blood inlet means is off-centered with respect to said hollow fiber bundle to increase the distance between said blood inlet means and said hollow fiber bundle and thus enlarge the flow area of said first blood flow passage facing said blood inlet means while gradually diminishing the flow area of said first blood flow passage with increasing distance from said blood inlet means, so that the amount of blood entering said first blood flow passage from said inlet means is substantially uniform circumferentially of said hollow fiber bundle and the flow rate of blood traveling axially of the housing within said blood chamber tends to be made uniform;

blood outlet means provided in a side wall of said housing in the vicinity of said second wall and having an opening communicating with said blood chamber;

a heat exchanger provided integral with a blood flow passage, which is formed by said blood chamber, at least at an upstream, downstream or intermediate portion of said blood flow passage;

gas inlet means provided on an outer side of at least one of said first and second walls; and

a blood reservoir provided on said housing on the side of said blood outlet means and formed integrally with said blood chamber for communicating directly with said blood chamber;

wherein said blood reservoir is defined in part by the outer periphery of a portion of said housing which extends along the axial direction of said blood chamber so that sufficient gas-exchange area with said blood chamber is afforded with a desired reserve volume of said blood reservoir.

4,620,966

PROCESS FOR DEFLUORINATING ALKALI METAL PHOSPHATE SOLUTIONS

Günther Schimmel; Herbert Ressel; Gero Heymer, all of Erftstadt, and Reinhard Gradl, Hürth, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jun. 11, 1984, Ser. No. 619,057

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1983, 3322503

Int. Cl.[4] C01B *25/16*

U.S. Cl. 423—185 **6 Claims**

1. In the process for producing alkali metal phosphate solutions being essentially free from fluorine from pre-purified, fluorine-containing alkali metal phosphate solutions obtained by processing a phosphate ore with sulfuric acid, separating resulting gypsum from the crude wet-processed phosphoric acid, reacting the said crude acid with an alkali solution and filtering off precipitated matter from the alkali metal phosphate solution so obtained, the improvement which comprises

(a) neutralizing the crude acid to a pH-value higher than 6, essentially to the dialkali metal phosphate stage, and filtering off the precipitated matter from the resultant pre-purified dialkali metal phosphate solution;

(b) stirring said phosphate solution at 60°–120° C. with an agent consisting essentially of a compound of an alkaline earth metal Me having a solubility in water at 20° C. of more than 0.01 mol Me^{2+}/l and separating resulting second precipitate from the dialkali metal phosphate solution being essenitally free from fluorine;

(c) alkaline earth metal compounds having a solubility in water of less than 5 g/l being used in the form of particles of which more than 50% have a size of less than 8 μm and the whole being allowed to react over a period of 0.5 to 4 hours before filtering off precipitated matter.

4,620,967

METHOD OF RECOVERING SULFUR IN A CLAUS PROCESS FROM VAPORS OBTAINED IN COKE OVEN GAS CLEANING

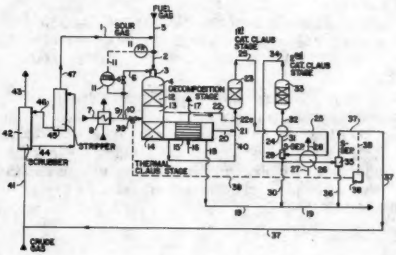
Kurt Tippmer, Recklinghausen, Fed. Rep. of Germany, assignor to Firma Carl Still GmbH & Co. KG, Fed. Rep. of Germany

Continuation of Ser. No. 593,731, Mar. 27, 1984, abandoned. This application May 9, 1985, Ser. No. 732,429

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1983, 3311372

Int. Cl.[4] B01D *53/34, 53/36;* C01B *17/04*

U.S. Cl. 423—236 **5 Claims**



1. A method of recovering sulfur in a Claus process, from sour gas vapor obtained during the cleaning of coke oven gas, which vapor contains hydrogen sulfide, hydrogen cyanide, ammonia and BTX, comprising:

supplying the coke oven gas (**41**) to a scrubber (**42**) for scrubbing out hydrogen sulfide, hydrogen cyanide and ammonia from the coke oven gas using washing liquors, BTX contained in the coke oven gas being scrubbed out at the same time;

stripping (**45**) the scrubbed out substances from the washing liquors to form the sour gas vapor (**1**) which contains hydrogen sulfide, hydrogen cyanide, ammonia and BTX;

burning the BTX of the vapor with only enough preheated air (**6**) at a temperature of 200° to 500° C., to heat the vapor to a temperature for decomposing hydrogen cyanide and ammonia;

supplying the heated vapor to a cracking reactor (**12**) under substantially ambient pressure to decompose components of the vapor into hydrogen, nitrogen and carbon monoxide;

adding preheated air (**10**) at a temperature of 200° to 500° C., to the vapor plus decomposed components (**13**);

supplying some of the vapor plus decomposed components with the preheated air to a thermal Claus reactor (**14**) under ambient pressure for burning some of the hydrogen sulfide in the vapor to form sulfur dioxide and to form a hot vapor mixture which is at a temperature within 100° C. of the temperature of the vapor plus decomposed components in the cracking reactor;

cooling the hot vapor mixture in a waste heat boiler (**15**) to a temperature of about 150° C. to form a cooled vapor mixture (**20**);

mixing the cooled vapor mixture (**21**) with some of the vapor plus decomposed components (**22**) from the cracking reactor to bring the temperature of the combined vapor to about 210° to 240° C. (**22a**);

supplying the combined vapor (**22a**) to a first catalytic Claus reactor (**23**) to form at least some sulfur;

supplying the vapor (**25**) from the first catalytic Claus reactor (**23**) to a second catalytic Claus reactor (**33**) to extract additional sulfur;

separating out the sulfur (**35**) to form a residual gas (**37**);

measuring the content of hydrogen sulfide in the residual gas (**38**) and adding the amount of preheated air (**39, 10**) to the vapor plus the decomposed components to adjust the total sulfur dioxide content of the residual gas to less than 400 ppm, and

recycling the residual gas (**37**) to the coke oven gas to be scrubbed with the hydrogen sulfide content being maintained between 0.5 to 1.2% by volume.

4,620,968

MONOCLINIC PHOSPHORUS FORMED FROM VAPOR IN THE PRESENCE OF AN ALKALI METAL

Christian G. Michel, Ossining; Rozalie Schachter, New York, both of N.Y.; Mark A. Kuck, Upper Montclair, N.J.; John A. Baumann, Dobbs Ferry, N.Y., and Paul M. Raccah, Chicago, Ill., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 335,706, Dec. 30, 1981, abandoned. This application Sep. 17, 1982, Ser. No. 419,537

Int. Cl.⁴ C01B *25/00, 25/01, 25/02;* **C04B** *35/00*

U.S. Cl. 423—299 **11 Claims**

1. A crystal of monoclinic phosphorus having a largest dimension substantially greater than 0.2 mm and having between 50 to 2,000 ppm of alkali metal, said crystal formed by the process comprising the steps of providing a vapor phase of phosphorus and an alkali metal, and crystallizing said crystal from said vapor phase at a temperature substantially within the range of 500°–560° C.

4,620,969

ELECTROLYSIS OF ALKALI METAL CHLORIDE SOLUTION WITH SUBSEQUENT PRODUCTION OF ALKALI METAL CARBONATES AND HYPOCHLORITES

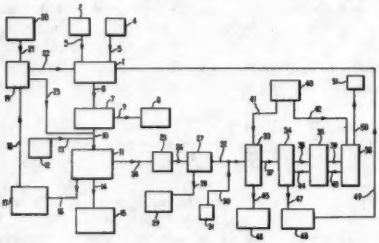
John S. Wilkinson, Huddersfield, England, assignor to Imperial Chemical Industries plc, London, England

Filed Sep. 13, 1985, Ser. No. 776,047

Claims priority, application United Kingdom, Sep. 19, 1984, 8423642

Int. Cl.⁴ C01D *7/07;* **C01B** *11/12;* **C25B** *1/34, 1/02*

U.S. Cl. 423—421 **10 Claims**



1. A process for the production of chlorine by the electrolysis of an aqueous alkali metal chloride solution which process comprises the steps of

(1) contacting an alkali metal carbonate with an aqueous alkali metal chloride solution which contains a polyvalent metal or metals in solution, precipitating therein compounds of polyvalent metals, and removing said precipitated compounds therefrom,

(2) electrolysing the solution from step (1) in an electrolytic cell to produce an aqueous alkali metal hydroxide solution and a gaseous stream containing chlorine and carbon dioxide,

(3) contacting the gaseous stream from step (2) containing chlorine and carbon dioxide, or a part thereof, with aqueous alkali metal hydroxide solution, in which step (3) of the process is effected in a plurality of reaction vessels, the gaseous stream containing chlorine and carbon dioxide, or a part thereof, being passed into a first reaction vessel or vessels and thence into a second reaction vessel or vessels and aqueous alkali metal hydroxide solution being charged to the first reaction vessel or vessels and aqueous alkali metal hydroxide solution being separately charged to the second reaction vessel or vessels, the process comprising the additional steps of

(4) removing an aqueous solution containing alkali metal hypochlorite from the first reaction vessel or vessels, and

(5) removing an aqueous solution containing alkali metal carbonate from the second reaction vessel or vessels.

4,620,970

METHOD FOR GENERATION OF OXYGEN GAS

Takeo Suzumori; Jun Kokubu, and Minoru Kubota, all of Yokkaichi, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Nov. 30, 1984, Ser. No. 676,849

Claims priority, application Japan, Dec. 6, 1983, 58-230431

Int. Cl.⁴ C01B *13/00;* **C09K** *3/00*

U.S. Cl. 423—579 **6 Claims**

1. A method for generating oxygen gas in which a peroxygen compound is contacted in water with a catalyst composed of cobalt salt and an organic carboxylic acid or the salt thereof having at least one hydroxyl group and at least one carboxyl group.

4,620,971

INDIUM-BLEOMYCIN COMPLEX

De-Yan Hou, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Filed Dec. 22, 1983, Ser. No. 564,411

Int. Cl.⁴ A61K *43/00, 49/00*

U.S. Cl. 424—1.1 **23 Claims**

8. A method for the preparation of an ^{111}In-BLMC complex of bleomycin and ^{111}Indium (III) lacking capacity for binding to serum transferrin, comprising reacting a bleomycin mixture derived from a culture broth of Streptomyces verticillus with $^{111}InCl_3$ at a pH of from about 1.5 to about 3.0.

4,620,972

METHOD OF INHIBITING THE GROWTH OF MALIGNANT TUMOR CELLS

George C. Lakatos, 29260 Franklin, Southfield, Mich. 48034

Filed Feb. 27, 1978, Ser. No. 881,467

Int. Cl.⁴ A61K *43/00, 49/00*

U.S. Cl. 424—1.1 **10 Claims**

1. The method of selectively inhibiting the metabolism of cancer cells in a human cancer patient, comprising the provision in the patient of antibodies to a foreign lactate dehydrogenase (LDH) which is capable when injected parenterally into a patient of stimulating the production of said antibodies in the patient and structured so that the antibodies thus produced will cross react effectively with the LDH of the patient's cancer cells to inhibit LDH mediated glycolyis in the cancer cells.

4,620,973

USE OF NOOTROPICS

Peter Truog, Bottmingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

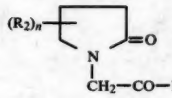
Continuation of Ser. No. 418,147, Sep. 15, 1982, abandoned, which is a continuation of Ser. No. 232,343, Feb. 6, 1981, abandoned. This application Jun. 14, 1985, Ser. No. 745,335

Claims priority, application Switzerland, Feb. 13, 1980, 1169/80

Int. Cl.[4] A61K *31/40*

U.S. Cl. 424—10 4 Claims

1. A method for mitigating the side effects of cytostatics agents wherein said side effects are selected from the group consisting of myocardiotoxic effects and side effects on bone marrow cells, gastro-intestinal cells and hair cells which comprises administering an effective amount of nootropics of formula I



wherein

R_1 is hydrogen and R_2 is hydroxy and n is an integer from 0 to 1, whereby compounds of the formula I wherein n is 1 can occur in the form of isomeric mixtures or in the form of pure isomers, for mitigating side-effects to a patient undergoing cytostatics treatment for cancer.

4,620,974

PHARMACEUTICAL COMPOSITION CONTAINING A LIQUID LUBRICANT

Marvin Hersh, Strafford, and Charles W. Lentine, Brookhaven, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 511,801, Jul. 17, 1983, abandoned. This application May 3, 1985, Ser. No. 730,232

Int. Cl.[4] A61J *3/07;* A61K *9/48*

U.S. Cl. 424—37 10 Claims

1. A hard gelatin, telescoping two-piece cap and body capsule filled with a solid pharmaceutical composition free of solid hydrophobic lubricant comprising a dry, powdery, dust-producing therapeutic agent in intimate admixture with a non-solubilizing amount of a pharmaceutically acceptable, liquid, hydrophilic, dust-reducing, lubricant, said lubricant being a polyethylene glycol of molecular weight from about 200 to about 900, present in said admixture in from about 0.5 to about 25 weight percent of composition.

4,620,975

Patent Not Issued For This Number

4,620,976

PEARLESCENT DISPERSION WITH GOOD FLOW PROPERTIES AND A LOW SURFACTANT CONTENT

Jochen M. Quack, Eppstein; Alwin Reng, Kelkheim; Werner Skrypzak, Liederbach, and Walter Kunz, Hattersheim am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

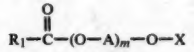
Filed Jun. 5, 1985, Ser. No. 741,606

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1984, 3421161

Int. Cl.[4] A61K *7/06, 7/08*

U.S. Cl. 424—70 8 Claims

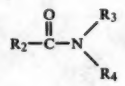
1. A pearlescent dispersion with good flow properties, which consists essentially of 5–30% by weight of a fatty acid glycol ester of the formula I



(I)

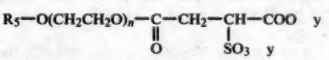
in which R_1 denotes a saturated or unsaturated hydrocarbon chain with 13–21 carbon atoms, A denotes a group of the formula $-C_2H_4-$ or $-C_3H_6-$, X denotes a hydrogen atom or a group of the formula

and m denotes a number from 1 to 10, 2–20% by weight of a fatty acid alkanolamide of the general formula II



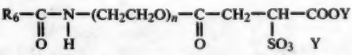
(II)

in which R_2 denotes a saturated or unsaturated hydrocarbon chain with 7–29 carbon atoms and R_3 and R_4 independently of one another denote a hydrogen atom or a group of the formula $-C_2H_4OH$ or $-C_3H_6OH$, 0.1–10% by weight of one or more surfactants of the formulae III–VI given below



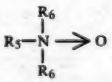
(III)

in which R_5 denotes a linear or branched, saturated or unsaturated hydrocarbon group with 8–20 carbon atoms, n denotes a number from 0 to 10, and Y denotes an alkali metal, alkaline earth metal or ammonium ion,



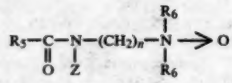
(IV)

in which R_6 denotes a linear or branched, saturated or unsaturated hydrocarbon chain with 7–29 carbon atoms and n and Y have the same meaning as in formula III,



(V)

in which R_5 and R_6 have the same meaning as in the formulae III and IV, and



(VI)

in which R_5, R_6 and n have the same meanings as in the formulae III and IV and Z denotes a hydrogen atom or an alkyl group with 1–5 carbon atoms, 0.1 to 3% of a monovalent or divalent metal salt, and water in the amount to make up to 100%.

4,620,977

TREATMENT METHODS, PARTICULARLY FOR PSYCHOACTIVE DRUG DEPENDENCE

Meir Strahilevitz, P.O. Box 25512, Seattle, Wash. 98125

Continuation of Ser. No. 761,290, Jan. 21, 1977, Pat. No. 4,375,414, which is a continuation of Ser. No. 255,154, May 19, 1972, abandoned. This application Nov. 9, 1981, Ser. No. 319,238

Claims priority, application United Kingdom, May 20, 1971, 16001/71

Int. Cl.[4] A61K *39/00*

U.S. Cl. 424—88 **12 Claims**

1. A method of treating a human for preventing dependence on a psychoactive hapten, said method comprising administering to said human, in a form adequate to produce antibodies, an antigenic conjugate of said hapten with a macromolecule.

4,620,978

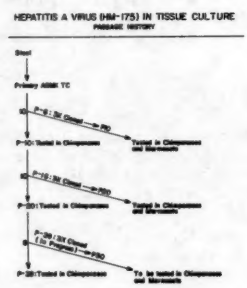
HEPATITIS A VIRUS PURIFIED AND TRIPLY CLONED

Richard J. Daemer; Stephen M. Feinstone, both of Washington, D.C.; Ian D. Gust, Fairfield, Australia, and Robert H. Purcell, Boyds, Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 366,165, Apr. 7, 1982, Pat. No. 4,532,215. This application Sep. 19, 1984, Ser. No. 652,067

Int. Cl.[4] A61K *39/29*

U.S. Cl. 424—89 **7 Claims**



1. A method of producing a protective antibody response in higher primates by injecting said primate with a hepatitis A live attenuated virus, strain HM-175 injection which is of uniform virus composition.

4,620,979

OPHTHALMOLOGICAL IRRIGATING SOLUTION CONTAINING ASCORBATE

Ronald A. Schachar, 7260 Lake View Dr., Denison, Tex. 75020

Filed Aug. 2, 1985, Ser. No. 761,791

Int. Cl.[4] A61K *31/34, 33/14*

U.S. Cl. 424—153 **8 Claims**

1. A method for maintaining substantially normal ascorbate levels in the ocular tissue of an eye subjected to an intraocular surgical procedure, which comprises irrigating the eye with an ophthalmic aqueous irrigating solution having the following composition:

	millimoles/liter
NaCl	80.0–115.0
KCl	3.5–10.5
$CaCl_2$	1.0–4.5
$MgCl_2.6H_2O$	0.0–1.5
NaH_2PO_4	0.0–0.9
$NaHCO_3$	0.0–30.0
Glucose	0.0–5.5
Adenosine	0.0–0.5
Glutathione	0.0–0.3
Sodium acetate	0.0–29.0
Sodium citrate	0.0–6.0
Sodium lactate	0.0–30.0
Ascorbate	5.0–30.0

4,620,980

PROCESS FOR THE CONTINUOUS CLARIFICATION OF FRESH FRUIT JUICE

Yves Dumont, Montreal, Canada, assignor to A. Lassonde & Fils Inc., Rougemont, Canada

Filed Mar. 23, 1983, Ser. No. 478,021

Claims priority, application Canada, Mar. 26, 1982, 399463

Int. Cl.[4] A23L *2/30, 2/26, 2/16, 2/02*

U.S. Cl. 426—330.5 **15 Claims**

1. Process for the continuous clarification of the juice of fresh fruits, said process comprising the steps of:

(a) adding a coagulant to rapidly form a floc in the juice to be clarified;

(b) continuously introducing the flocculated juice and a non-deleterious gas in the form of micro-bubbles in a flotation vessel, said micro-bubbles adhering to the floc and regrouping particles of floc on a surface of the juice;

(c) continuously removing from said flotation vessel said particles of floc regrouped on the surface of the juice; and

(d) continuously removing clarified juice from said flotation vessel whereby a part of the pectin of the juice is maintained in the clarified juice.

4,620,981

PROCESS FOR PREPARING A HIGHLY EXPANDED OAT CEREAL PRODUCT

Warren A. Gordon, Buffalo Grove; Walter L. Hempenius, Cary, and James R. Kirkwood, Arlington Heights, all of Ill., assignors to The Quaker Oats Company, Chicago, Ill.

Filed Jun. 19, 1984, Ser. No. 622,309

Int. Cl.[4] A23L *1/18, 1/10;* **A21D** *6/00, 8/00*

U.S. Cl. 426—448 **7 Claims**

1. A method of making a highly expanded, porous oat cereal product comprising the steps of:

a. classifying an oat flour by separating particles of the flour into at least two classes of differing particle size to separate out a particle size having a low beta-glucan oat flour with a beta-glucan content of less than about 3.3%;

b. cooking a cereal flour mix comprising the low beta-glucan

oat flour in a cooker-extruder wherein the low beta-glucan oat flour comprises at least about 55% of cereal flour in the mix and the mix has a moisture content of about 25% to 40%;

c. expanding and shaping the cooked mix into a shaped cereal product by expressing the mix from the cooker-extruder under expanding conditions;

d. immediately heat setting the expanded, shaped cereal product; and

e. drying the heat set cereal product to a moisture content at which is is structurally stable to obtain a porous oat cereal product having a density or below about 12 ounces per 121.5 cubic inches.

4,620,982

PASTILLES OF THE LOZENGE TYPE BASED ON CRYSTALLINE SORBITOL OR FRUCTOSE AND PROCESS FOR THEIR MANUFACTURE

Michel Serpelloni, Bethune, France, assignor to Roquette Freres, France

Filed Dec. 15, 1983, Ser. No. 561,919

Claims priority, application France, Dec. 17, 1982, 82 21270

Int. Cl.[4] A23G *3/00*

U.S. Cl. 426—658 **6 Claims**

1. Process for the manufacture of a lozenge comprising sorbitol or fructose and a binder having a dry mass and an even surface comprising the successive steps of

(i) preparing a binder solution comprising hydrated gum, gelatin, water, and optionally starch,

(ii) preparing a dough by initimately mixing said binder solution with a major amount of crystalline sorbitol or fructose, about 0.1 to 5% by weight with respect to the total mass of the dough of a corbonate in the form of particles which releases CO_2 on decomposition, and a stoichiometric amount of an organic acid so as to distribute the carbonate particles and the acid throughout the dough as regular as possible and cause reaction of said carbonate and said acid to release carbon dioxide,

(iii) rolling the dough in the form of a layer of thickness selected in advance,

(iv) hardening the surface of the rolled dough,

(v) cutting it up into lozenges of the desired shape, and

(vi) drying the thus obtained lozenges, to provide a lozenge having said even surface and dry mass and having a plurality of homogeneously distributed microcavities at least some of which communicate with the surface of the lozenge.

4,620,983

METHOD OF AND SYSTEM FOR MONITORING AND APPLYING LIQUID FOAM TO A SUBSTRATE

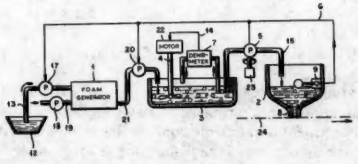
Johannes Zimmer, Ebentaler Str. 133, 9020 Klagenfurt, Austria

Filed Jun. 22, 1984, Ser. No. 623,425

Claims priority, application Austria, Jun. 23, 1983, 2313/83

Int. Cl.[4] B05D *5/00*

U.S. Cl. 427—8 **16 Claims**



4. A method of uniformly spreading a liquid foam over a moving substrate by way of an applicator provided with a slot nozzle extending across said substrate transversely to the direction of motion thereof, comprising the steps of:

(a) preparing a liquid foam at a location spaced from said applicator;

(b) preliminarily accumulating a quantity of said liquid foam in a storage vessel spaced from but connected to both said applicator and said location;

(c) continuously monitoring the consistency of the liquid foam in said storage vessel and rectifying any deviations from a predetermined value;

(d) continuously feeding liquid foam from said storage vessel to said applicator; and

(e) continuously applying liquid foam from said applicator to said substrate through said nozzle, excess liquid foam being recirculated at a controlled rate from said applicator to said storage vessel.

4,620,984

METAL VAPOR DEPOSITION METHOD AND APPARATUS

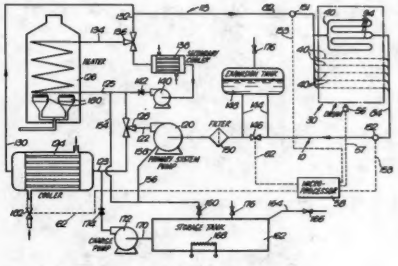
Dudley S. Hoddinott, Oxford, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Oct. 9, 1984, Ser. No. 658,705

Claims priority, application United Kingdom, Oct. 28, 1983, 8328858

Int. Cl.[4] C23C *16/06*

U.S. Cl. 427—9 **5 Claims**



1. A method for producing a layer of a metallic material by deposition from the vapour phase onto a collector so as to form the layer thereon, wherein the method includes passing a heat transfer fluid through ducts in thermal contact with the collector, measuring the thickness of the layer, and adjusting the temperature of the inflowing heat transfer fluid in accordance with the thickness of the layer so as to maintain the outer surface of the layer at a predetermined temperature.

4,620,985

CIRCUMFERENTIAL GROOVE COATING METHOD FOR PROTECTING A GLASS BOTTLE

William H. Goodburn, Columbus, Ohio, and Robert E. Waugh, Sun City Center, Fla., assignors to The D. L. Auld Company, Columbus, Ohio

Filed Mar. 22, 1985, Ser. No. 715,102

Int. Cl.[4] B05D *3/06*

U.S. Cl. 427—55 **20 Claims**

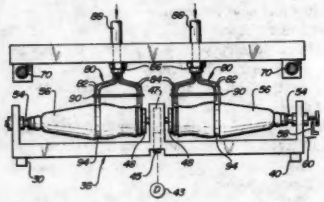
1. A method of protecting a portion of the surface of a glass bottle in at least one area from scuffing due to contact with bottle handling and filling equipment, other bottles, and bottle containers, comprising the steps of:

(a) providing a glass bottle defining a circumferential groove in the larger diameter area or areas of said bottle,

(b) rotating the bottle about a horizontal axis,

(c) applying uncured plastic liquid to only the said larger diameter area or areas of said bottle by flow coating said plastic liquid into said circumferential groove from a liquid applicator nozzle means, an amount of plastic liquid

being applied which is sufficient to fill completely said circumferential groove, and



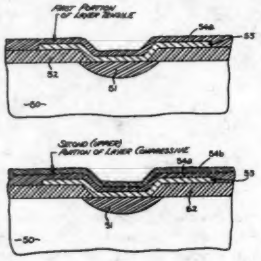
(d) curing said plastic liquid to produce a bottle which is protected from scuffing by a circumferential band of plastic material in the area to be protected.

4,620,986

MOS REAR END PROCESSING

Leopoldo D. Yau, Durham; Robert A. Gasser, Jr., Cornelius; Kenneth R. Week, Jr., Sherwood; Jick M. Yu, Beaverton, and David D. Chin, Aloha, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Division of Ser. No. 670,161, Nov. 9, 1984, Pat. No. 4,587,138.
This application Oct. 15, 1985, Ser. No. 787,537
Int. Cl.[4] B05D *5/12*; G03C *7/26*
U.S. Cl. 427—93 9 Claims



1. A process for hermetic passivation of a conductive layer comprising the step of:

forming a composite layer over said conductive layer, said composite layer consisting of a lower, tensile layer in the region above said conductive layer and an upper, compressive layer,

whereby metal cracking is reduced.

4,620,987

SURFACE TREATMENT METHOD FOR MAGNETIC PARTICLES

Hiroshi Yamashita, Numazu, and Kenkichi Muto, Yokohama, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 25, 1984, Ser. No. 614,407
Claims priority, application Japan, Jun. 3, 1983, 58-97926
Int. Cl.[4] B05D *5/12*
U.S. Cl. 427—131 8 Claims

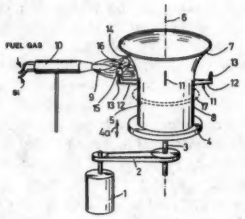
1. A surface treatment method for uncoated magnetic particles consisting of magnetic material comprising the steps of activating by heating said uncoated magnetic particles to a temperature of 100° C. to 500° C., treating the surfaces of said magnetic particles with a reactive silane coupling agent, mixing the silane-treated magnetic particles with at least one polymerizable vinyl monomer, polymerizing said monomer to form a polymer, and thereby coating the surfaces of said magnetic particles with said polymer.

4,620,988

FLAME HYDROLYSIS COATING APPARATUS PARTICULARLY FOR DENTAL PROSTHESES

Adelheid Garschke, Saalfeld; Hans-Jürgen Tiller, Jena; Roland Göbel, Jena; Brigitte Magnüs, Jena, all of German Democratic Rep., and Steffen Oppawsky, Bad Homburg, Fed. Rep. of Germany, assignors to Kulzer & Co. GmbH, Wehrheim, Fed. Rep. of Germany

Filed Apr. 30, 1985, Ser. No. 728,771
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1984, 3423637
Int. Cl.[4] B05D *3/08*
U.S. Cl. 427—223 31 Claims



1. Flame hydrolysis coating apparatus, particularly for coating of articles such as dental prostheses with a silicon oxide adhesion promoting cover or coating, having

a flame hydrolysis burner (10) projecting an elongated flame cone towards the articles (15);

a turret (3, 4) rotatable about a turret axis (3);

holder means (11, 12) holding and supporting the articles (15) to be coated, and secured to and rotatable with the turret,

and comprising, in accordance with the invention,

means for generating turbulence at the tip of the elongated flame cone (9) including

a deflection surface (8, 8') located—with respect to the flame projection—behind the holder means (11, 12) for the articles and positioned to be impinged by the tip of the flame to deflect the tip of the flame thereby from conical form and introduce turbulence (16) in the flame tip in the region of the articles (15) held in the holder means and reflecting the flame from behind the articles back towards the articles.

29. Method of coating articles by flame hydrolysis including the steps of:

projecting an elongated flame cone towards the articles;

and creating flame turbulence or swirling in the region of impingement of the flame cone on the articles by redirecting the tip portion of the flame cone at a region located—with respect to flame projection—behind the articles to thereby cause turbulence at the tip portion of the flame, and to reflect a portion of the flame back towards the articles from the rear surface—with respect to flame projection—thereof.

4,620,989
METHOD AND DEVICE FOR IMPREGNATING ESPECIALLY NATURAL STONES

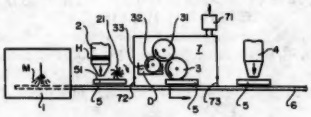
Ludwig Stiegler, Solnhofen, Fed. Rep. of Germany, assignor to Johann Stiegler KG, GMBH & Co., Solnhofen, Fed. Rep. of Germany

Filed Sep. 12, 1984, Ser. No. 650,327

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1983, 3333276

Int. Cl.[4] B05D *3/02, 3/12;* **C23C** *14/00*

U.S. Cl. 427—289 **11 Claims**



1. In a method of impregnating a plate (**5**) of a natural paving stone, with a dispersed cross-linked plastic material, in which a dispersion (D) of the material is applied to the surface (**51**) of the plate to be impregnated and the dispersant is substantially evaporated, the improvement wherein the plate (**5**) is extensively saturated with the pure dispersant (M) and subsequently only the surfaces (**51**: lateral surfaces) of the plate that are to be saturated are force dried at an air temperature and speed and for a duration sufficient for an area (**52**) of a predetermined depth corresponding to a small fraction of the thickness of the plate to dry, and the dispersion (D) is then applied or sprayed in a regulated flow, over the surfaces (**51**) to be impregnated, followed by forced drying of the impregnated surfaces (**51**).

3. The method as in claim **1** or **2**, wherein the plate (**5**) is saturated with pure dispersant (M) while being cut and ground or trimmed and cleaned of dust between being dried and having the dispersion (D) applied to it.

4,620,990
METHOD OF IMPREGNATING WOOD

Paul-Erik Dickèr, Bergsgatan 16, S-561 31 Huskvarna, Sweden

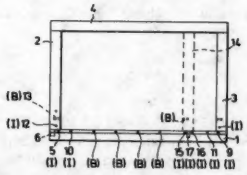
PCT No. PCT/SE83/00181, § 371 Date Jan. 4, 1984, § 102(e) Date Jan. 4, 1984, PCT Pub. No. WO83/03997, PCT Pub. Date Nov. 24, 1983

PCT Filed May 5, 1983, Ser. No. 584,949

Claims priority, application Sweden, May 6, 1982, 8202861

Int. Cl.[4] B05D *3/12*

U.S. Cl. 427—291 **11 Claims**



1. A method of impregnating a wooden structure by diffusion of boric acid, said wooden structure of the type including a long wooden object along the length of which a moisture ratio varies, said method comprising the steps of:

drilling bores along the length of said wooden structure at intermittent distances from each other;

inserting in selected ones of said bores disodium octaborate in the form of a solid fused body, whereby said disodium octaborate dissolves under the influence of moisture in said wood, to react and form boric acid, which diffuses into said wood;

inserting in remaining ones of said bores disodium octaborate dissolved in a hygroscopic liquid, whereby said disodium octaborate migrates together with said hygroscopic liquid into said wood, and reacts with water bound in cellulose to form boric acid;

said steps of inserting being further characterized by selecting a number of bores with fused bodies relative to the number of bores with liquid, such that the total amount of boric acid formed constitutes a fungus inhibitory dose and being substantially a fungus lethal dose for a volume of wood in said wooden structure;

said step of drilling said bores being further characterized by the step of:

selecting the intermittent distances between bores such that said boric acid penetrates said entire wooden structure, and sealing said bores after the insertion of said boric acid.

4,620,991
APPARATUS FOR THE IMPREGNATION OF POROUS ARTICLES

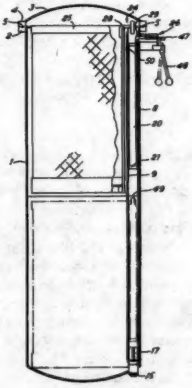
Peter D. Young, Guernsey, Channel Islands, assignor to Ultraseal International Limited, Guernsey, Channel Islands

Filed Jan. 31, 1985, Ser. No. 696,801

Claims priority, application United Kingdom, Feb. 2, 1984, 8402770

Int. Cl.[4] B05D *1/18, 3/00;* **C23C** *14/00*

U.S. Cl. 427—294 **13 Claims**



13. A method of impregnating a porous article comprising the steps of:

filling a sealable vessel body with a liquid impregnant;

positioning porous articles to be impregnated on a support member in said vessel body above said impregnant;

sealing said vessel body;

drawing a vacuum in said vessel body;

permitting said support member and porous articles to descend into said impregnant under the force of gravity;

using said impregnant in a damping means to control a rate of said descent;

releasing said vacuum;

opening said vessel body; and

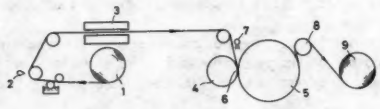
withdrawing said article from said vessel body.

4,620,992

METHOD OF PRODUCING CAST COATED PAPER

Kazuhiro Nojima, and Mikio Takahashi, both of Amagasaki, Japan, assignors to Kanzaki Paper Mfg. Co., Ltd., Tokyo, Japan

Filed Dec. 21, 1984, Ser. No. 685,051
Claims priority, application Japan, Dec. 29, 1983, 58-248078
Int. Cl.[4] B05D *3/02, 3/12*
U.S. Cl. 427—362 8 Claims



1. A method of producing cast coated paper comprising the steps of rewetting a coating layer mainly composed of pigment and adhesive, and pressing said coating layer against a heated highly polished drum so as to obtain a high gloss finish on the surface of said coating layer, characterized by adding to the coating composition that forms said coating layer a salt from the group consisting of zinc sulfate, zinc nitrate, zinc acetate, zinc formate, aluminum sulfate, aluminum nitrate, aluminum acetate, aluminum formate, magnesium sulfate, magnesium nitrate, magnesium acetate and magnesium formate, as a special auxiliary agent, and by using as the whole or part of said ahesive a copolymer latex which contains an unsaturated carboxylic acid as a copolymerized monomer unit, the content of said unsaturated carboxylic acid in said copolymer latex being 0.5% to 10% by weight of said copolymer latex.

4,620,993

COLOR PLUS CLEAR COATING SYSTEM UTILIZING ORGANO-MODIFIED CLAY IN COMBINATION WITH ORGANIC POLYMER MICROPARTICLES

Naomi R. Suss, Pittsburgh, and Samuel Porter, Jr., Natrona Heights, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 30, 1984, Ser. No. 595,216
Int. Cl.[4] B05D *1/36*
U.S. Cl. 427—407.1 15 Claims

1. A method of coating a substrate comprising the steps of:

(A) coating a substrate with one or more applications of a basecoating composition comprising:

(1) an organic film-forming resin, and where the film-forming resin can be crosslinked, optionally a crosslinking agent for the film-forming resin,

(2) a solvent system for the film-forming resin, and

(3) an organo-modified clay and organic polymer microparticles which organo-modified clay is derived from an organic cation, an organic anion and a smectite-type clay and which organic polymer microparticles have a diameter in the range of from about 0.01 to about 10 microns and which are insoluble in the solvent system of the basecoating composition, both the organo-modified clay and organic polymer microparticles being stably dispersed in the basecoating composition, wherein the sum by weight of the organo-modified clay and organic polymer microparticles in the basecoating composition ranges from 1 to 30 percent based on the weight of the organic film-forming resin, the optional crosslinking agent, the organo-modified clay and the organic polymer microparticles, and

(4) pigment particles to form a basecoat; and thereafter before a substantial amount of drying or curing of said basecoat has occurred;

(B) coating the basecoat with one or more applications of a topcoating composition comprising:

(1) an organic film-forming resin, which may be the same as or different from the film-forming resin of the basecoating composition, and where the film-forming resin of the topcoating composition can be crosslinked, optionally a crosslinking agent for the film-forming resin of the topcoating composition, and

(2) a solvent system for the organic film-forming resin of the topcoating composition

to form a transparet topcoat;

wherein, after said steps (A) and (B), said basecoat and said topcoat dry or cure together.

4,620,994

COLOR PLUS CLEAR COATING SYSTEM UTILIZING ORGANO-MODIFIED CLAY

Naomi R. Suss, Pittsburgh, and Samuel Porter, Jr., Natrona Heights, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 30, 1984, Ser. No. 595,106
Int. Cl.[4] B05D *1/36*
U.S. Cl. 427—407.1 12 Claims

1. A method of coating a substrate comprising the steps of:

(A) coating a substrate with one or more applications of a basecoating composition comprising:

(1) an organic film-forming resin, and where the film-forming resin can be crosslinked, optionally a crosslinking agent for the film-forming resin,

(2) an organo-modified clay stable dispersed in the basecoating composition wherein the organo-modified clay is derived from an organic cation, an organic anion and a smectite-type clay and said organo-modified clay is present in the basecoating composition in an amount ranging from about 1 to about 20 percent by weight based on the weight of organic film-forming resin, optional crosslinking agent, and organo-modified clay,

(3) a solvent system for the film-forming resin, and

(4) pigment particles to form a basecoat; and thereafter before a substantial amount of drying or curing of said basecoat has occured;

(B) coating the basecoat with one or more applicaitons of a topcoating composiiton comprising:

(1) an organic film-forming resin, which may be the same as or different from the film-forming resin of the basecoating composition, and where the film-forming resin of the topcoating composition can be crosslinked, optionally a crosslinking agent for the film-forming resin of the topcoating composition, and

(2) a solvent system for the organic film-forming resin of the topcoating composition to form a transparent topcoat;

wherein, after said steps (A) and (B), said basecoat and said topcaot dry or cure together.

4,620,995

SURFACE COATED GASKET SHEET

Nobuyuki Otomo; Hiroaki Chiba; Tsuneo Uno; Toshiki Aono, and Kozo Suzuki, all of Tokyo, Japan, assignors to Marusan Packing Manufacturing Co., Tokyo, Japan

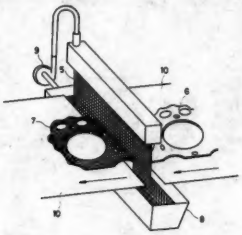
Filed Jun. 28, 1985, Ser. No. 749,761
Claims priority, application Japan, Jul. 18, 1984, 59-107670
Int. Cl.[4] B05D *1/40*
U.S. Cl. 427—420 12 Claims

1. A process for providing a cylinder head gasket with a heat-resistant, corrosion-resistant, substantially uniform baked PTFE film coating layer on all of the gasket surfaces of a core, said process comprising the steps of:

(a) providing as a gasket core a sheet of metal having fiber-reinforced rubber sheets bonded to two opposite faces thereof;

(b) applying a film coating of a PTFE liquid resin composition to said core by passing said core at least once through

a flowing curtain of the PTFE liquid resin composition; and



(c) heating the thus-coated core to form a tough, adherent, baked-on film on the gasket surfaces of said core.

4,620,996

COATING DEVICE AND COATING METHOD BY USE THEREOF

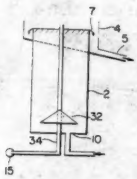
Yuichi Yashiki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 573,576, Jan. 25, 1984, abandoned. This application Jul. 25, 1985, Ser. No. 758,841

Claims priority, application Japan, Jan. 27, 1983, 58-12257; Sep. 12, 1983, 58-142036[U]

Int. Cl.[4] B05D *1/18*

U.S. Cl. 427—430.1 **5 Claims**



5. A method for coating an object to be coated with paint by dipping the object in a coating bath containing a paint, which comprises (i) feeding paint into the lower part of the coating bath; (ii) dipping the object to be coated in the coating bath; and (iii) uniformizing the upward flow of the paint from the lower part of the coating bath toward the upper part thereof by means of a uniformizing member provided in the lower part of the coating bath to direct the upward flow of the paint along the entire wall periphery of the coating bath and provide a uniform and smooth flow of paint around each portion of the object immersed in said coating bath.

4,620,997

METHOD FOR COATING SUBSTRATES

Edward Bok, Badhoevedorp, Netherlands, assignor to Integrated Automation Limited, Road Town, British Virgin Isls.

PCT No. PCT/NL84/00005, § 371 Date Oct. 10, 1984, § 102(e) Date Oct. 10, 1984, PCT Pub. No. WO84/03238, PCT Pub. Date Aug. 30, 1984

PCT Filed Feb. 20, 1984, Ser. No. 695,722

Claims priority, application Netherlands, Feb. 21, 1983, 8300649

The portion of the term of this patent subsequent to Dec. 24, 2002, has been disclaimed.

Int. Cl.[4] B05D *1/18*; B44C *1/22*; C23C *16/00*

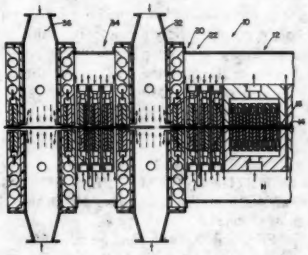
U.S. Cl. 427—434.3 **12 Claims**

1. Method for coating substrates comprising:

a. flowing gaseous medium longitudinally within a confined passageway via a series of gaseous medium supply channels and gaseous medium discharge channels intersecting the top and bottom of said passageway;

b. introducing said substrates into an end of said passageway, so as to be supported "contact-free" by said flowing gaseous medium, while

c. advancing said substrates "contact-free" within said passageway by said flowing gaseous medium; and



d. injecting a coating medium into said passageway via a number of branched coating medium supply channels, intersecting said passageway adjacent said gaseous medium supply channels and gaseous medium discharge channels, so as to coat said advancing substrate.

4,620,998

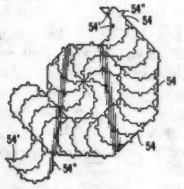
CRESCENT-SHAPED POLYGONAL TILES

Haresh Lalvani, 317 Washington Ave., Apt. 4A, Brooklyn, N.Y. 11205

Filed Feb. 5, 1985, Ser. No. 698,534

Int. Cl.[4] B44C *1/28*; B44F *11/04*

U.S. Cl. 428—33 **6 Claims**



1. A system of plane-filling polygonal tiles, the combination comprising:

a plurality of tiles interconnected to form a continuous surface and to form a non-periodic mosaic,

each of said tiles having greater than six sides and including a substantially crescent-shaped body member having an outer edge directly interconnected with an inner edge,

said outer and inner edges each being formed from p straight sides having equal length,

said outer edge being substantially convex,

said inner edge being substantially concave,

adjacent ones of said outer edge sides each being oriented at an interior angle V, and

adjacent ones of said inner edge sides each being oriented at an exterior angle V,

the number of sides p being selected from the group consisting of the even numbers greater than six.

4,620,999

DISPOSABLE BAGS

Paul A. Holmes, North Yorkshire, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Nov. 5, 1984, Ser. No. 668,201

Claims priority, application United Kingdom, Nov. 15, 1983, 8330414

Int. Cl.[4] B65D *55/18;* A61G *9/00*

U.S. Cl. 428—35 10 Claims

1. A package including at least one body-waste bag comprising a 3-hydroxybutyrate polymer and requisite amount of a basic material to modify the pH of the contents of all the body-waste bags in the package, at the time the bags are half filled with human faeces and/or urine, to a value of at least about 12.

4,621,000

EDGE STIFFENER FOR PLASTIC BAGS

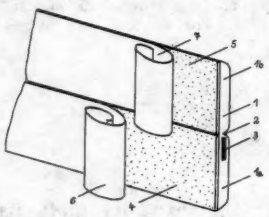
Ursula Frick, Wilhelm Trübnerstrasse 16, D-6944 Hemsbach, Fed. Rep. of Germany

Filed Jul. 3, 1985, Ser. No. 751,668

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1984, 3424885

Int. Cl.[4] B32B *1/04;* B65D *33/02*

U.S. Cl. 428—40 8 Claims



1. A device for stiffening the edge of the opening of a plastic bag or similar material comprising a band of stable plastic material easily stably deformable by hand, said band being provided with a longitudinally extending fold-line to facilitate folding thereof, and being foldable along its length to U-form, the surfaces of said band which form the inner surfaces of the U when said band is folded to U-form being provided with a coating of tacky adhesive which will adhere to the material the edge of which is to be stiffened, said band being provided with at least one bendable reinforcement which is disposed adjacent the fold-line of the band and extended along its length, said reinforcement comprising a ductile material selected from the group consisting of a metal strip and a metal wire.

4,621,001

TILE-SHAPED COMPOSITE ELEMENT

Martin Bard, Amberg, Fed. Rep. of Germany, assignor to Buchtal Gesellschaft mit berschrankter Haftung, Fed. Rep. of Germany

Filed Feb. 21, 1985, Ser. No. 703,873

Claims priority, application Fed. Rep. of Germany, Feb. 29, 1984, 3407443

Int. Cl.[4] B32B *3/30;* E04F *13/00*

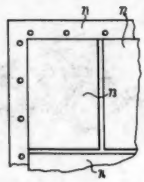
U.S. Cl. 428—49 21 Claims

1. A tile-shaped composite element comprising:

a ceramic base tile element having a front face portion and a rear face portion positioned opposite said front face portion;

a ceramic visible tile element having a front face portion and a rear face portion positioned opposite said front face portion; said ceramic visible tile element being juxtaposed said ceramic base tile element with said rear face portion of said ceramic base tile element contiguous said rear face portion of said ceramic visible tile element;

nesting structure means located on said rear face portion of each of said ceramic base and visible tile element; and



means for bonding said nesting structure means on said rear face portion of each of said ceramic base and visible tile element whereby said rear face portion of said ceramic base tile element is bonded to said rear face portion of said visible tile element to provide a structurally enhanced composite ceramic tile element.

4,621,002

MONOCOQUE STRUCTURE FOR AN AQUATIC SPORTSCRAFT

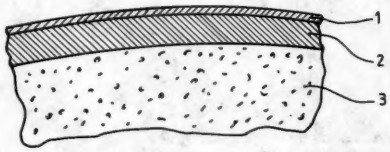
Werner Kuhlmann, Westerndorf-Stephanskirchen, and Heinrich Uphoff, Aschau, both of Fed. Rep. of Germany, assignors to Kleeper Beteilingungs GmbH & Co. Bootsbau KG, Rosenheim, Fed. Rep. of Germany

Filed Aug. 3, 1984, Ser. No. 638,281

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1983, 3328596

Int. Cl.[4] B32B *27/08*

U.S. Cl. 428—71 8 Claims



1. A monocoque structure for aquatic sportscraft comprising a sheet of a thermoplastic material including at least two constituent layers bonded to one another, characterized in that the two constituent layers (1, 2) are extruded and bonded to one another immediately after extrusion while still in their plastic state, the first polymer layer (1) comprising a thermoplastic polymer from the group consisting of linear polyesters and polyamides and the second layer (2) comprising a thermoplastic polystyrene copolymer, said first layer (1) having a thickness of about 0.08 to 0.3 mm and said second layer (2) having a thickness of about 0.8 to 1.8 mm, said first layer (1) being opaque to light, said sheet being hot-molded into a hollow shell; and a foam core foamed in situ within said shell.

4,621,003

PORTABLE PAD FOR IRONING

Susan O'Kane, 27 Flamingo Plz., Hialeah, Fla. 33010

Continuation-in-part of Ser. No. 532,549, Sep. 15, 1983, abandoned. This application Jun. 4, 1985, Ser. No. 740,964

Int. Cl.[4] B32B *3/00*

U.S. Cl. 428—71 8 Claims

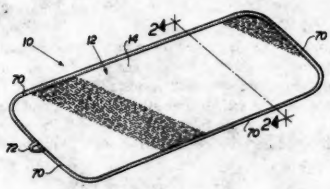
1. A portable ironing board assembly of the type primarily designed to be carried with and used by travelers, said assembly comprising:

(a) an envelope including a first sheet and a second sheet each formed of a flexible material of sufficient flexibility to

be rolled upon itself into a stored position and each corresponding in dimension and configuration to one another, said first and said second sheets disposed in overlying relation to one another and positioned to define oppositely disposed and exposed surfaces of said envelope,

(b) a flexible material padding structure corresponding in dimension and configuration to said first and second sheets and disposed in sandwiched relation between said first and second sheets and being of sufficient flexibility to be rolled along with said first and second sheets,

(c) a first undersheet and a second undersheet formed of a flexible material fabric and being adhesively secured to one another and adhesively secured to and between at least an undersurface of said first sheet and a cooperatively positioned surface of said padding structure, substantially over the entire respective surfaces of said first sheet and said padding structure,



(d) said envelope including a closed configuration defined by a securing means for securing the peripheral edge of the envelope and interconnecting correspondingly positioned peripheral edges of said first and said second sheets, said first and said second undersheets and said padding structure to one another along the length of the periphery of said envelope,

(e) said first and said second sheets each comprising a fabric base coated over the entire surfaces thereof with a heat resistant material until said first and said second sheets are impregated therewith, and

(f) said first and said second sheets of said envelope comprising oppositely disposed and exposed surfaces thereof and dimensioned and configured for performing ironing on at least one of said exposed surfaces.

4,621,004

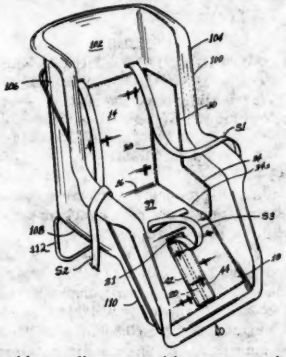
DISPOSABLE CAR SEAT LINING

Laurie Madsen, 6 W. Cedar, New Baden, Ill. 62265

Filed Sep. 3, 1985, Ser. No. 772,043

Int. Cl.[4] B32B *3/06*

U.S. Cl. 428—80 **15 Claims**



1. A disposable seat liner comprising: a composite material including a disposable material to absorb moisture; a facing which holds the absorbent material in place; said disposable car seat liner composite material including a longitudinally extending body portion having an end portion with a slit provided therein to receive a car seat strap; laterally spaced L-shaped side members attached to either side of the upper body portion; each L-shaped member having a leg extending outwardly from near the middle of the body portion; a fold line defined in the mid portion of the L-shaped legs and extending through the transverse extent of the liner, whereby when the liner is placed within a car seat, the upper portion of the sides and the body portion extend vertically within the car seat, the body portion and the portion of the L-shaped legs below the fold line extend generally horizontally in the seat, and whereby the L-shaped side members below the fold line and the body portion below the fold line define a pocket within which a child may sit.

4,621,005

POLYMERIC-COATED FABRIC LAYER, PRODUCT UTILIZING THE LAYER AND METHOD AND APPARATUS FOR MAKING THE SAME

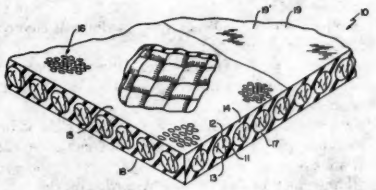
Delmar D. Long, Rock Hill, S.C., and John F. Anderson, Jr., Springfield, Mo., assignors to Dayco Corporation, Dayton, Ohio

Division of Ser. No. 482,365, Apr. 5, 1983, Pat. No. 4,520,038. This application Jan. 17, 1985, Ser. No. 692,158

The portion of the term of this patent subsequent to May 28, 2002, has been disclaimed.

Int. Cl.[4] B32B *3/02*

U.S. Cl. 428—86 **10 Claims**



1. In a polymeric-coated fabric layer means that is adapted to be secured to a surface of a polymeric belt body of a polymeric belt construction, said fabric layer means comprising a fabric layer having opposed sides, and a main layer of polymeric material secured to one of said sides of said fabric layer and having an outer surface facing away from said one side of said fabric layer so as to be adapted to be secured to said surface of said polymeric belt body by a heat curing operation on said belt body and said layer in the assembled relation there, the improvement comprising a gauge building layer of fibers secured to said one side of said fabric layer with another layer of polymeric material that is disposed on said one side before said layer of fibers is disposed thereon whereby said gauge building layer means has a plurality of voids therein, said main polymeric layer filling said voids of said gauge building layer of fibers, said polymeric material of said main layer having filled said voids while said main layer was in liquid form.

4,621,006

HONEYCOMB TABLE MANUFACTURE AND CLEAN-ROOM COMPATIBLE HONEYCOMB TABLES

Dennis C. Terry, Costa Mesa, and Thomas R. Musser, Fountain Valley, both of Calif., assignors to Newport Corporation, Fountain Valley, Calif.

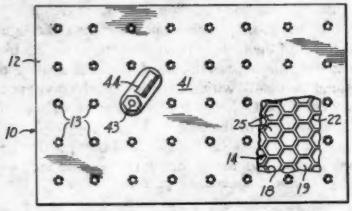
Filed Oct. 22, 1984, Ser. No. 663,343

Int. Cl.[4] B32B *3/12*

U.S. Cl. 428—116 **27 Claims**

1. In a method of manufacturing a honeycomb table having a honeycomb core extending between and supporting an apertured table leaf and a facing sheet spaced from said table leaf by a first distance and having internal cells extending between said table leaf and said facing sheet and communicating with apertures in said table leaf, the improvement comprising the step of:

rendering said honeycomb table clean-room compatible by sealing said cells at a level thereof spaced from said table



leaf by a second distance several times smaller than said first distance.

4,621,007

INFORMATION SIGNAL RECORDING MEDIUM

Hiroshi Nakajima, Sagamihara; Yoshihito Nakane, Yokohama; Toshikazu Goshima, Sagamihara; Osamu Narita, Yokohama; Akira Nishizawa, Yokohama, and Fuminari Suzuki, Yokohama, all of Japan, assignors to Victor Company of Japan, Ltd., Japan

Filed Jun. 6, 1985, Ser. No. 741,801

Claims priority, application Japan, Jun. 8, 1984, 59-116596

Int. Cl.[4] B32B *5/16, 27/08*

U.S. Cl. 428—206 **18 Claims**

1. An information signal recording medium of electrostatic capacitance type comprising:

a core material made of a non-conductive material, said core material containing a polyvinyl chloride homopolymer as a base; and

a surface material made of a conductive material and in close adherence with at least one surface of said core material, variations in geometrical configuration in accordance with information signals to be recorded on the recording medium being compression molded on said surface material, said surface material containing a polyvinyl chloride resins as a base and being admixed with carbon black,

the materials constituting said surface material and said core material being selected so that a ratio V_C/V_N between a melt viscosity V_C of said surface material and a melt viscosity V_N of said core material at a temperature and a shear rate at the time of the compression molding is less than or approximately equal to 1.6.

4,621,008

MAGNETIC RECORDING MEDIUM

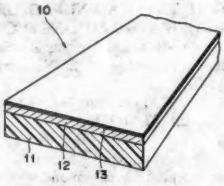
Yasufumi Takasugi, Saku; Osamu Kohmoto, Ichikawa; Hiroshi Sugihara, Saku, and Masaharu Nishimatsu, Komoro, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Oct. 18, 1984, Ser. No. 662,051

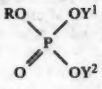
Claims priority, application Japan, Oct. 18, 1983, 58-195756; Oct. 20, 1983, 58-196722

Int. Cl.[4] G11B *5/72*

U.S. Cl. 428—216 **11 Claims**



1. A magnetic recording medium comprising a substrate, a continuous thin magnetic layer on the substrate, and a topcoat formed over the magnetic layer, characterized in that the topcoat consists of a compound having the formula:



R is selected from the group consisting of substituted or unsubstituted alkyl radicals having 10 to 22 carbon atoms which may be saturated or have an unsaturated double bond in their backbone, and substituted or unsubstituted aryl, alkaryl, aralkyl and alkylarylalkyl radicals having 6 to 20 carbon atoms, and

Y^1 and Y^2 may be the same or different and selected from the group consisting of hydrogen atom, cations, and substituted or unsubstituted alkyl and aryl radicals, the alkyl radicals being saturated or having an unsaturated double bond in their backbone, and

Y^1 and Y^2 may together represent a divalent cation,

with the proviso that R does not stand for an unsubstituted straight-chain saturated alkyl radical when Y^1 and Y^2 are independently hydrogen atom or cation, and that all R and Y^1 and/or Y^2 do not stand for an unsubstituted straight-chain saturated alkyl radical when Y^1 and/or Y^2 is an alkyl radical.

4,621,009

TEAR RESISTANT PLASTIC SHEET FOR USE IN XEROGRAPHIC COPIERS

Dalubhai M. Lad, Diamond Bar, Calif., assignor to Avery International Corporation, Pasadena, Calif.

Filed Sep. 21, 1984, Ser. No. 652,637

Int. Cl.[4] B32B *5/16, 7/02, 27/08, 27/36*

U.S. Cl. 428—216 **15 Claims**

1. A plastic sheet for use in a xerographic copier having a thickness of at least about 4.0 mils and an opacity of at least about 75% comprising:

a polyester film having a thickness of at least about 3.0 mils; and

a coating on at least one side of the polyester film, said coating having a thickness of from about 0.2 to about 0.6 mils, a glass transition temperature of from about 50° C. to about 150° C., and a Sheffield surface smoothness of from about 28 to about 50, said coating comprising:

a resin binder in an amount of from about 30% to about 50% by weight of the coating; and

a filler in an amount of from about 30% to about 70% by weight of the coating.

4,621,010

CORROSION RESISTANT STRUCTURES AND ELEMENTS AND METHOD OF MAKING SAME

Herman C. Wadsworth, Truro, England, assignor to Noncor Linings N.V., Curacao, Netherlands Antilles

Filed Aug. 7, 1984, Ser. No. 638,411

Int. Cl.[4] B05D *7/00*

U.S. Cl. 428—220 **12 Claims**

1. The method of producing a structure resistant both to mechanical stresses and to chemical attack, in particular attack by corrosive acids, including the steps of:

introducing a bonding synthetic resin into a rotary drum;

adding a hardening accelerator or other curing promoter;

introducing into the drum a particulate material composed of not less than 70 per cent by weight of rounded particles in a size range not less than 0.5 mm, with the overall ratio by weight of particulate filler material to resin being in the region of 8:1;

rotating the drum about an upright, substantially vertical axis with a fixed flow distributor or paddle projecting into the drum for a predetermined period;

adding a catalyst to the drum and further rotating the drum

to mix the catalyst thoroughly into the mixture in the drum; and

casting the mixture in a mould.

8. A structure of corrosion resistant material having a body of synthetic plastics resin with an inert filler composed of not less than 70 per cent by weight of rounded particles in a size range not less than 0.5 mm and a skin layer, at least on one of the surfaces of said structure, comprising the same synthetic plastics resin as the body with a filler of siliceous particles in a size range less than 0.5 mm.

4,621,011

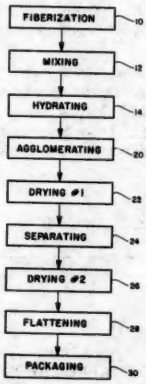
AGGLOMERATED CELLULOSIC PARTICLES

Glen R. Fleischer; Barry B. Glashagel, both of Neenah; Elwood W. Harke, Kimberly, all of Wis.; Robert C. Sokolowski, Alpharetta, Ga., and James E. Fay, Neenah, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 602,276, Apr. 24, 1984, abandoned, which is a continuation-in-part of Ser. No. 482,366, Apr. 5, 1983, which is a continuation-in-part of Ser. No. 463,100, Feb. 2, 1983, abandoned. This application Sep. 30, 1985, Ser. No. 782,242

Int. Cl.[4] B32B *23/00*

U.S. Cl. 428—221 **39 Claims**



1. A particle having a compacted outer surface comprises fibrous cellulosic material and has a bulk density of about 0.15 to about 0.9 kg. per liter.

4,621,012

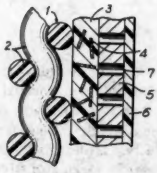
CAMOUFLAGE NET HAVING A SEMICONDUCTIVE LAYER

Gunter Pusch, Bannholzweg 12, 6903, Neckargemund 2, Fed. Rep. of Germany

Filed Nov. 15, 1984, Ser. No. 671,562

Int. Cl.[4] B32B *5/16*

U.S. Cl. 428—242 **21 Claims**



1. A camouflaging material for military targets effective in the spectral range from visible light to radar waves comprising a laminate having in sequence

(a) a textile fabric base;

(b) a soft thermoplastic coating on said base containing randomly distributed dipole materials having a rod-like shape and semiconductive properties to absorb radar rays;

(c) a metallic layer adhering to said coating to reflect infrared radiation and capable of transmitting radar waves; and

(d) an optically camouflaging paint layer thereon.

4,621,013

THERMOFORMABLE LAMINATE STRUCTURE

James S. Holtrop, South Windsor, Conn., and Richard P. Maurer, Wilbraham, Mass., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 553,594, Nov. 21, 1983, Pat. No. 4,476,183, and a continuation-in-part of Ser. No. 553,462, Nov. 21, 1983, Pat. No. 4,489,126. This application Sep. 4, 1984, Ser. No. 647,095

The portion of the term of this patent subsequent to Dec. 18, 2001, has been disclaimed.

Int. Cl.[4] B32B *5/18, 5/28*

U.S. Cl. 428—245 **6 Claims**

1. A moisture-resistant, moldable, thermoformable laminate structure comprising:

(a) a layer of a substantially rigid foamed thermoplastic material, selected from the group consisting of polystyrene, styrene copolymers and polyethylene, said layer having first and second surfaces; and

(b) a coating bonded to one of said surfaces; said coating being a polymer-impregnated cloth; wherein said polymer is a styrene-methacrylic acid copolymer having a softening temperature greater than approximately 75° C.

4,621,014

BIAXIALLY ORIENTED POLYOLEFIN FILMS WITH ETHYLENE-VINYL ALCOHOL BARRIER LAYER

Pang-Chia Lu, Pittsford, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 27, 1984, Ser. No. 686,811

Int. Cl.[4] B32B *27/08*

U.S. Cl. 428—216 **12 Claims**

1. A biaxially oriented, polyolefin containing film comprising:

(A) two outer layers comprising polyolefin; and

(B) a polyamide-free oxygen barrier layer sandwiched between said (A) layers comprising an ethylene vinyl alcohol polymer and an amount of aromatic sulfonamide effective to render the ethylene vinyl alcohol layer orientable at temperatures suitable for the biaxial orientation of the polyolefin layers (A).

4,621,015

LOW DENSITY, MODIFIED POLYIMIDE FOAMS AND METHODS OF MAKING SAME

John V. Long, 1756 E. Lexington Ave., El Cajon, Calif. 92021, and John Gagliani, 6280 Lance Pl., San Diego, Calif. 92120

Division of Ser. No. 549,618, Nov. 7, 1983, Pat. No. 4,518,717. This application Mar. 7, 1984, Ser. No. 587,020

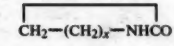
The portion of the term of this patent subsequent to Oct. 9, 2001, has been disclaimed.

Int. Cl.[4] C08J *9/00, 9/12;* **B32B** *5/18, 5/20*

U.S. Cl. 428—317.7 **8 Claims**

1. A resilient, flame resistant modified polyimide foam product produced by the following process steps;

reacting an oxime having general formula

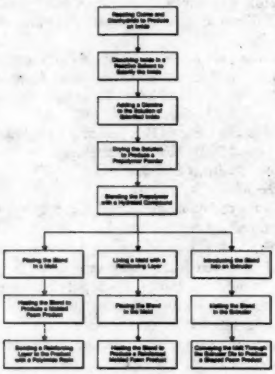


where "x" is a positive integer from 1–5, with an aromatic dianhydride in a mole ratio of oxime to dianhydride up to about 1.5:1 to produce an N-substituted aliphatic imide;

dissolving said imide in a reactive solvent esterifying agent to esterify said imide;

drying the resulting solution to produce a powdered prepolymer;

blending with said powdered prepolymer from about 0.05 to 10 wt. %, based on prepolymer weight, of a hydrated compound which is stable up to at least about 100 C.;



shaping the blended material with a shaping means; and

heating said shaped blended material to a selected foaming emperature of from about 120 C. to about 320 C. for a period of from about 10 to 60 minutes;

whereby said shaped blended material melts and spontaneously foams producing a foam product.

2. The invention as defined in the claim 1 wherein the product produced by said process is a composite product and is produced by the further step of bonding a reinforcing layer of material to a surface of said foam product with a polyimide resin.

4,621,016

MAGNETIC RECORDING MEDIA

Akiho Kawata; Youichiro Morino; Harumi Okajima, and Shuichi Miya, all of Gunma, Japan, assignors to Kanto Denka Kogyo Co., Ltd., Tokyo, Japan

Filed Sep. 6, 1984, Ser. No. 647,670

Claims priority, application Japan, Sep. 28, 1984, 58-179933

Int. Cl.[4] G11B *5/70*

U.S. Cl. 428—323 **13 Claims**

1. A magnetic recording medium consisting of a magnetic layer comprising particles of a magnetic powder material embedded in a matrix of a binder and a substrate carrying said magnetic layer, wherein said magnetic layer further comprises carbon black and a fluorinated graphite material in a total amount of about 0.3–20 parts by weight per 100 parts by weight of said magnetic powder material and said fluorinated graphite material is present in a relative proportion of about 5–90% by weight of the total weight of said carbon black and fluorinated graphite material.

4,621,017

CORROSION AND WEAR RESISTANT GRAPHITE MATERIAL AND METHOD OF MANUFACTURE

Richard C. Chandler, Bedford Hts., and Lutfi H. Amra, Cleveland Hts., both of Ohio, assignors to Kennecott Corporation, Cleveland, Ohio

Division of Ser. No. 368,700, Apr. 15, 1982. This application Mar. 5, 1984, Ser. No. 586,297

Int. Cl.[4] B32B *5/16, 9/00*

U.S. Cl. 428—328 **11 Claims**

1. A process for the manufacture of carbonaceous articles having enhanced oxidation-resistance and erosion-resistance characteristics, comprising the steps of:

(a) forming a carbonaceous article into a desired shape having a desired surface finish:

(b) forming a layer of silicon carbide at the surface of the article; and

(c) impregnating the silicon carbide-coated article with aluminum phosphate, the aluminum phosphate being distributed through the silicon carbide layer and into at least a portion of the carbonaceous article.

11. An article produced by the process according to either of claims 1 or 5.

4,621,018

MAGNETIC RECORDING MEDIUM

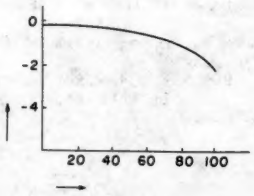
Kuniichi Yoda, and Kaoru Kawasaki, both of Saku, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Feb. 14, 1985, Ser. No. 701,620

Claims priority, application Japan, Feb. 14, 1984, 59-24305

Int. Cl.[4] G11B *5/70*

U.S. Cl. 428—329 **2 Claims**



1. A magnetic recording medium comprising a transparent support and a magnetic layer formed on the support, said magnetic layer comprising Co-adsorbed Fe_3O_4 and Co-adsorbed γ-Fe_2O_3 in a weight ratio of from 40:60 to 80:20, each of said Co-adsorbed Fe_3O_4 and Co-adsorbed γ-Fe_2O_3 having a particle size of at least 25 m^2/g as a BET value, said magnetic recording media exhibiting reduced accidental stoppage due to light transmittance and enhanced thermal stability.

4,621,019

NON-PHOTOSENSITIVE TRANSFER RESIST

John P. Vikesland, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 19, 1985, Ser. No. 702,827
Int. Cl.[4] B32B 9/00; C09J 7/02
U.S. Cl. 428—347 27 Claims

1. A non-photosensitive transfer resist sheet material comprising in sequence

(a) a strippably adhered carrier support,

(b) a release layer, and

(c) a flexible, water-insoluble, aqueous-alkaline-soluble, non-photosensitive resist layer comprising a thermoplastic organic polymer.

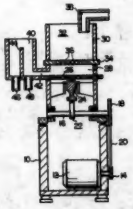
wherein said resist maintains its physical integrity during chemical operations up to a pH of at least 9.0, and wherein said resist is able to be adhered to a surface against which it is pressed at a temperature above 60° C.

4,621,020

POLYESTER FIBERS

Mikio Tashiro, and Kou Tsukiyama, both of Matsuyama, Japan, assignors to Teljin Ltd., Osaka, Japan

Filed Apr. 12, 1985, Ser. No. 722,258
Claims priority, application Japan, Apr. 13, 1984, 59-73008
Int. Cl.[4] D02G 3/00; D21F 11/00; D21H 5/12
U.S. Cl. 428—361 10 Claims



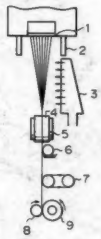
1. A paper making polyester fiber, the improvement comprising that the papermaking polyester fiber comprises a copolymer containing a dicarboxylic acid component and has applied to the surface thereof a copolymerized polyester (I) which consists of (A) a polyester comprising terephthalic acid or an ester-forming derivative of terephthalic acid, isophthalic acid or an ester-forming derivative of isophthalic acid and a lower alkylene glycol (b) about 0.2 mol percent to about 40 mol percent, with respect to the quantity of the dicarboxylic acid component in the copolymer to be produced, of an ester-forming alkali metal sulfonate and (c) about 20 percent by weight to about 90 percent by weight, with respect to the quantity of the copolymer to be produced, of a polyethylene glycol having an average molecular weight within the range of from about 500 to 1200, wherein the paper making polyester fiber has a denier number within the range of from about 0.1 to about 3.0 and a length within the range from about 5 mm to about 25 mm, and provides a packing factor of more than about 40 and a quantity of residual fibers of less than about 1000 mg on a flat screen plate when measured by the flat screen method.

4,621,021

POLYHEXAMETHYLENE ADIPAMIDE FIBER HAVING HIGH DIMENSIONAL STABILITY AND HIGH FATIGUE RESISTANCE, AND PROCESS FOR PREPARATION THEREOF

Kazuyuki Kitamura, Nobeoka, Japan, assignor to Asahi Kasei Kogyo Kabushiki Kaisha, Japan

Filed Oct. 19, 1984, Ser. No. 662,822
Claims priority, application Japan, Oct. 20, 1983, 58-195170; Oct. 20, 1983, 58-195171
Int. Cl.[4] D02G 3/00
U.S. Cl. 428—364 3 Claims



1. A high-tenacity polyhexamethylene adipamide fiber having a formic acid relative viscosity of 50 to 150, a tensile strength of at least 7.5 g/d and an elongation of 12 to 20%, said fiber being characterized by having (1) an intermediate elongation not larger than 8% under a stress of 5.3 g/d, (2) a difference between elongation (%) at break and intermediate elongation (%) under 5.3 g/d of at least 6%, (3) a shrinkage factor not larger than 5% under dry heat conditions at 160° C., (4) a crystal perfection index of at least 60% and (5) a peak temperatures Tmax of the dynamic mechanical loss tangent (tan ϵ) as measured at a frequency of 110 Hz satisfying the requirement of the following formula:

$$100 \leqq Tmax + 4(9.5 - DS) \leqq 116$$

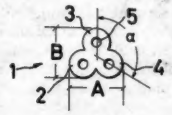
wherein DS stands for the tensile strength (g/d).

4,621,022

EXPANDABLE PLASTICS GRANULAR MATERIAL HAVING AT LEAST ONE ORIFICE

Günter Kohaut, Königstein; Werner Weber, Nauheim, both of Fed. Rep. of Germany; Herman Groenendijk, Oosterhout, Netherlands; Adrianus C. Poppelaars, and Wilhelmus H. J. Janssen, both of Breda, Netherlands, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 28, 1986, Ser. No. 823,467
Claims priority, application Fed. Rep. of Germany, Jan. 30, 1985, 3503057
Int. Cl.[4] B65D 81/02, 85/30
U.S. Cl. 428—397 17 Claims



1. A plastics granular material of foamable particles in star shape, wherein the plastics granular material consists predominantly of particles which are derived from a star-shaped or cloverleaf-shaped basic body with at least three limbs lying in a plane, the particles having at least one orifice.

9. A packaging material of foamed plastics particles, ob-

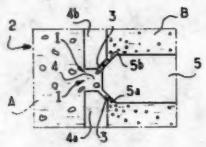
tained by foaming the plastics granular material as claimed in claim 1.

4,621,023

METHOD OF HOMOGENIZING DISPERSIONS OF HYDRATED LIPIDIC LAMELLAR PHASES AND SUSPENSIONS OBTAINED BY THE SAID METHOD

Gérard Redziniak, Sartrouville, and Alain Meybeck, Courbevoie, both of France, assignors to Parfums Christian Dior, France

Filed Oct. 13, 1983, Ser. No. 541,426
Claims priority, application France, Oct. 15, 1982, 82 17311
Int. Cl.⁴ B05D *1/36*
U.S. Cl. 428—402.2 **29 Claims**



1. A method for obtaining a homogenized suspension of hydrated lipidic lamellar phases entrapping a liquid, comprising the successive steps of:

(a) providing an appropriate liquid,

(b) dispersing in said liquid, a lipidic phase or a lipidic lamellar phase containing at least one amphiphilic lipid, thereby obtaining a dispersion of said lipidic phase or lipidic lamellar phase in said liquid, and

(c) directly feeding said dispersion under a feeding pressure ranging between about 10,000 kPa and about 70,000 kPa into a passageway of small width defined between the walls of an orifice and the edges of an obturating element adjustably arranged in the section of said orifice, against the flow of said dispersion,

thereby encapsulating said liquid within lipidic lamellar particles of said lipidic lamellar phase by entrapping a part of said liquid within said lipidic lamellar particles and forming a suspension in homogenized form of said encapsulated particles in the remaining liquid, thus achieving a high rate of encapsulation of said liquid within said lipidic lamellar particles.

4,621,024

METAL-COATED HOLLOW MICROSPHERES

Frederick A. Wright, Chattanooga, Tenn., assignor to Paper Applications International, Inc., Chattanooga, Tenn.

Filed Dec. 31, 1984, Ser. No. 687,997
Int. Cl.⁴ B05D *1/36, 7/00*; B32B *5/16, 9/00*
U.S. Cl. 428—404 **20 Claims**

13. Metal-coated hollow microspheres obtained by:

(a) vigorously admixing a major quantity of hollow microspheres having an average particle size diameter ranging from about 60 microns to about 180 microns, with about 3 to about 6 weight percent, based on the weight of the final product, of a thermosetting binder adhesive, said adhesive comprising an organo functional silane and a copolymerizable monomer, until said microspheres are wet-out;

(b) adding metal flakes to the thus wet-out microspheres from step (a) until said wet-out microspheres are coated with said metal flakes, said metal flakes having an average particle size of about 2 microns to about 10 microns;

(c) applying heat and slowly increasing the temperature of the metal-coated microspheres from step (b) until a temperature of up to about 350° F. is reached to thereby cure said binder and bind said metal flakes to said microspheres; and

(d) intermittently admixing-agitating the metal-coated microspheres from step (c) in the absence of further heating until said metal-coated micrspheres are dry after which said metal-coated microspheres are recovered as product.

4,621,025

β-KETO AMIDE MODIFIED EPOXY RESINS

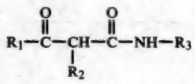
James D. B. Smith, Monroeville Boro, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 23, 1985, Ser. No. 778,948
Int. Cl.⁴ C08G *59/44*
U.S. Cl. 428—414 **12 Claims**

1. A composition comprising:

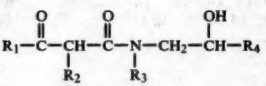
(A) an epoxy resin;

(B) about 0.1 to about 2 moles per epoxy equivalent weight of a β-keto amide having the general formula



where R_1 is selected from the group consisting of alkyl to C_{20}, aliphatic, cycloaliphatic, and arylakyl, R_2 is selected from the group consisting of hydrogen and R_1, and R_3 is selected from the group consisting of aryl and R_1.

5. A β-keto amide modified epoxy resin having the general formula



where R_1 is selected from the group consisting of alkyl to C_{20}, aliphatic, cycloaliphatic, and arylakyl, R_2 is selected from the group consisting of hydrogen and R_1, and R_3 and R_4 are independently selected from the group consisting of aryl and R_1.

10. A composition comprising a β-keto amide modified epoxy resin according to claim 5, an epoxy resin, and an epoxy curing agent.

4,621,026

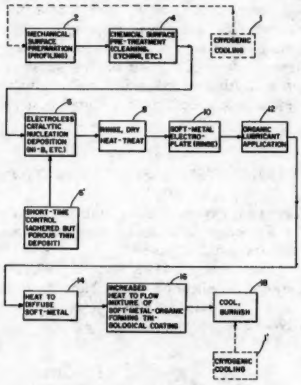
PROCESS FOR PROVIDING METALLIC ARTICLES AND THE LIKE WITH WEAR-RESISTANT COATINGS, AND IMPROVED COATED METALLIC ARTICLES AND THE LIKE

W. W. Robinson, Richmond, Va., assignor to Richmond Metal Finishers, Inc., Richmond, Va.

Division of Ser. No. 328,913, Dec. 9, 1981, Pat. No. 4,484,988. This application Sep. 20, 1984, Ser. No. 652,601
Int. Cl.⁴ B32B *27/00*; C21D *1/62*; C25D *5/44*
U.S. Cl. 428—422 **16 Claims**

1. A metallic article having a wear-improved surface to which is adhered a thin fractional mil nickel-boron porous coating having voids filled with, and a surface coated by, a hardened molten mixture of a metal softer than the porous coating and a low friction coefficient dry lubricant material,

the porosity of the nickel-boron coating being of the order from about 20% to 50% surface voids.


MECHANICAL SURFACE PREPARATION (PROFILING)
CHEMICAL SURFACE PRE-TREATMENT (CLEANING, ETCHING, ETC.)
CRYOGENIC COOLING
ELECTROLESS CATALYTIC NUCLEATION DEPOSITION (NI-B, ETC.)
RINSE, DRY HEAT-TREAT
SOFT-METAL ELECTRO-PLATE (RINSE)
ORGANIC LUBRICANT APPLICATION
SHORT-TIME CONTROL (ADHERED BUT POROUS THIN DEPOSIT)
HEAT TO DIFFUSE SOFT-METAL
INCREASED HEAT TO FLOW MIXTURE OF SOFT-METAL-ORGANIC FORMING THE BIOLOGICAL COATING
COOL, BURNISH
CRYOGENIC COOLING

2. A metallic article as claimed in claim 1 and in which the soft metal is of indium and the dry lubricant material is of polytetrafluoroethylene.

4,621,027

MAGNETIC RECORDING MEDIUM

Tsutomu Okita; Nobuo Tsuji; Yoshito Mukaida; Hiroshi Hashimoto, all of Kanagawa; Teruo Nakagawa, Aichi; Akiyoshi Hashimoto, Aichi, and Takahisa Ogasawara, deceased, late of Aichi, all of Japan (by Kuniko Ogasawara, legal representative), assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 29, 1984, Ser. No. 666,081

Claims priority, application Japan, Nov. 1, 1983, 58-203631

Int. Cl.[4] G11B *5/70*

U.S. Cl. 428—425.9 **21 Claims**

1. A magnetic recording medium comprising a support and a magnetic layer disposed thereon, said magnetic layer containing as its binder component a combination of at least one member of each of the following groups of compounds (1) to (3) that has been exposed to electron beams:

(1) vinyl chloride type resin, vinyl acetate type resin, chloride-vinyl acetate type resin, each vinyl containing from 5×10^{-5} to 2×10^{-3} equivalents of $-CO_2H$ groups per gram of copolymer, and nitrocellulose resin;

(2) urethane resins and urethane-acrylate oligomers; and

(3) compounds containing an isocyanurate ring and at least groups selected from two acryloyl and methacryloyl groups within the molecule.

4,621,028

GLASS HAVING CONTROLLABLE INFRARED TRANSMISSION

Harry A. Beale, 1307 Windham Rd., Columbus, Ohio 43220

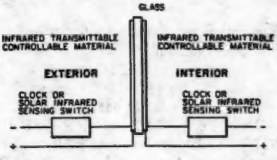
Continuation-in-part of Ser. No. 481,127, Apr. 1, 1983, abandoned. This application Jan. 9, 1984, Ser. No. 569,110

Int. Cl.[4] B32B *9/04, 13/04, 15/00, 17/06*

U.S. Cl. 428—432 **2 Claims**

1. A glass sheet provided on one side with a first coating containing V_2O_3 as its principal ingredient, said V_2O_3 containing a sufficient amount of at least one alloying element so that the transformation temperature of said V_2O_3 is elevated so that said coating will reflect infrared energy when the ambient temperature is above approximately 45° F.–60° F. and will transmit infrared energy when said ambient temperature is below approximately 45° F.–60° F. and wherein said glass sheet is provided on the other side with a second coating which reflects or transmits infrared energy when an electric current is passed therethrough, said coating comprising as its active ingredient a material selected from the group consisting of a doped semi-conductor which semi-conductor is in freeze out at normal room temperature and a magneto optic material which changes its reflectivity to infrared energy upon being placed in a magnetic field.

2. A glass sheet provided at least on one side with a coating which may be activated to reflect or transmit infrared energy by causing an electric current to be transmitted therethrough,



said coating comprising a semi-conductor which is still in freeze out at room temperature but which contains a dopant and which, upon the passage of a small amount of current elevates the temperature of said semi-conductor so that said dopant in said semi-conductor takes over said conduction process and wherein said semi-conductor is bismuth selenide and said dopant is selected from the group consisting of carbon and copper.

4,621,029

MEDICAL SEALANT FOR SKIN

Nobuhisa Kawaguchi, Kamakura, Japan, assignor to Fuji Systems Corporation, Tokyo, Japan

Filed Jan. 11, 1985, Ser. No. 690,583

Claims priority, application Japan, Jan. 17, 1984, 59-4789

Int. Cl.[4] B32B *9/04*

U.S. Cl. 428—447 **11 Claims**

1. A medical sealant having a thickness of at least 2 mm comprising polyorganosiloxane gel for sealing a junction part between living skin and a medical instrument penetrating through the skin, said polyorganosiloxane having a three dimensional structure expressed by the general formula

$$R_nSiO_{(4-n/2)}$$

wherein R represents hydrogen or monovalent hydrocarbon group having not more than 6 carbon atoms and n represents an integer of 1 to 3, characterized in that said gel contains an effective amount of a silicone oil, not exceeding 500 parts by weight of silicone oil per 100 parts by weight of said polyorganosiloxane gel so that the sealant has a hardness expressed by a loading weight of 1 g to 250 g by which a disc of a diameter of 10 mm sinks to 1.0 on the gel.

4,621,030

PERPENDICULAR MAGNETIC RECORDING MEDIUM AND MANUFACTURING METHOD THEREOF

Yasutaro Uesaka, Kokubunji; Hideo Fujiwara, Tokorozawa; Sadao Hishiyama, Sayama, and Kazuo Shiiki, Kanagawa, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Maxell, Ltd., Osaka, both of, Japan

Filed Jul. 13, 1983, Ser. No. 513,422

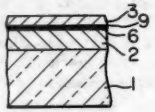
Claims priority, application Japan, Jul. 19, 1982, 57-124346; Sep. 13, 1982, 57-158096

Int. Cl.[4] B21C *37/00*

U.S. Cl. 428—607 **33 Claims**

1. A perpendicular magnetic recording medium comprising a substrate, a high permeability magnetic material film formed

on said substrate, an antiferromagnetic material film formed on said high permeability magnetic material film, and a perpendicularly oriented magnetic material film formed over said antiferromagnetic material film.

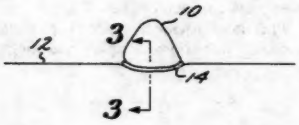


4,621,031

COMPOSITE MATERIAL BONDED BY AN AMORPHOUS METAL, AND PREPARATION THEREOF

David M. Scruggs, San Juan, Calif., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Nov. 16, 1984, Ser. No. 672,120
Int. Cl.⁴ B32B *15/04*; C22C *27/04*; B24D *3/06*
U.S. Cl. 428—627 **6 Claims**



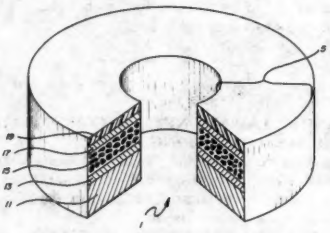
1. A bonded composite material, comprising:
a substrate;
a piece of second material having a low ductility; and
a continuous layer of amorphous metal interposed as a matrix between said piece of second material and said substrate, whereby said piece and said substrate are bonded together by the amorphous metal.

4,621,032

METHOD OF FORMING A DATA STORAGE MEDIUM AND DATA STORAGE DEVICE BY CONGRUENT SUBLIMATION

John P. deNeufville, Mendham, N.J., and David A. Strand, West Bloomfield, Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Jul. 29, 1985, Ser. No. 760,226
Int. Cl.⁴ B32B *9/00*, *19/00*; C23C *16/00*
U.S. Cl. 428—688 **25 Claims**



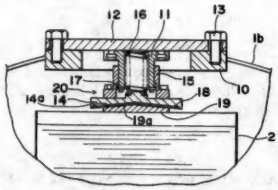
14. An optical data storage device having a layer of a multi-component, phase changeable, chalcogenide material on a substrate, said layer being deposited by the method comprising:
a. providing in a vacuum deposition means a substantially non-convecting, multi-component, congruently vaporizing chalcogenide first source,
b. converting the chalcogenide first source to a non-condensed state having substantial source/non-condensed state compositional equivalence; and
c. depositing material from the non-condensed state onto the substrate to form a deposit having substantial non-condensed state/deposit compositional equivalence and the substantial absence of concentration gradients.

4,621,033

FUEL CELL SYSTEM AND ITS VIBRATION-PROOF DEVICE

Masaru Tsutsumi, Hyogo; Hideo Hagino, Otsu, and Osamu Fujiwara, Takasago, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Nov. 19, 1985, Ser. No. 799,720
Claims priority, application Japan, Nov. 20, 1984, 59-245401
Int. Cl.⁴ H01M *2/10*
U.S. Cl. 429—12 **8 Claims**



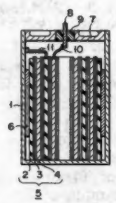
1. A fuel cell system of the kind wherein a fuel cell stack is housed in a pressure vessel comprising a vibration-proof device arranged between the top of the fuel cell stack and the pressure vessel, said device comprising a forcing means mounted on an interior wall of the top of the pressure vessel, and a counter member mounted on the top of the fuel cell stack and provided at its top with a projection or recess in a spherical or conical form, said forcing means comprising a pressure member provided at its bottom with a recess or projection in a spherical or conical form and forced downward to engage with the top of said counter member.

4,621,034

SEALED METAL OXIDE-HYDROGEN STORAGE CELL

Motoya Kanda; Yuji Sato, both of Yokohama; Eriko Shincho, Tokyo, and Kiyoshi Mitsuyasu, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 26, 1985, Ser. No. 759,310
Claims priority, application Japan, Jul. 31, 1984, 59-160527; Sep. 27, 1984, 59-202711; Sep. 27, 1984, 59-202712
Int. Cl.⁴ H01M *12/06*, *10/34*
U.S. Cl. 429—59 **17 Claims**



1. A method of producing a sealed metal oxide-hydrogen storage cell, comprising the step of housing in a container a cathode containing a metal oxide as an active material, an anode containing a hydrogen storage alloy as the main component, a separator for separating the cathode and the anode, a pre-charging member electrically combined with the anode

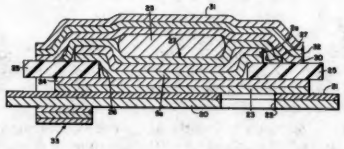
and consisting of a metal having a less noble potential than the hydrogen electrode potential within an alkaline solution or a material containing said metal as the main component, and an electrolyte solution consisting of an alkaline aqueous solution.

4,621,035

LITHIUM BATTERIES WITH LAMINAR ANODES

Alan H. Bruder, Burlington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 20, 1982, Ser. No. 341,197
Int. Cl.⁴ H01M *6/46*
U.S. Cl. 429—152 **5 Claims**



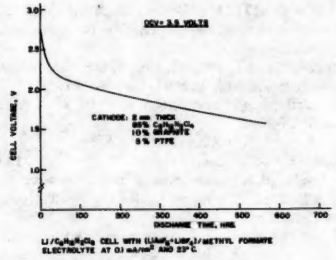
1. A laminar electrical cell, comprising an anode, a cathode, and an electrolyte permeable separator beween said anode and said cathode, said anode consisting essentially of a layer of lithium having at least one surface of unreacted lithium metal in direct contact with and adhered to a layer of conductive plastic with no intermediate adhesive promoting adjuncts, and said cathode comprising a slurry of MnO_2 and carbon particles in a solution of a lithium salt in an organic solvent, said solution permeating said separator and being in contact with said lithium.

4,621,036

HALOGENATED ORGANIC SOLID DEPOLARIZER

Narayan Doddapaneni, Glenside, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 653,797, Sep. 24, 1984, abandoned. This application Sep. 6, 1985, Ser. No. 773,107
Int. Cl.⁴ H01M *6/14, 4/60;* C07D *487/00*
U.S. Cl. 429—194 **15 Claims**



7. An electrochemical cell comprising:

a lithium anode;

an electrolyte comprising an amount of $LiBF_6$ and $LiAsF_6$ in methyl formate;

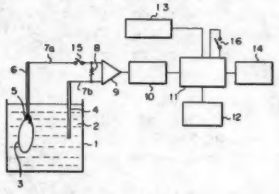
a solid cathode comprising an amount of N,N′-tetrahalo derivative of tetraethylenediamine and graphite together with an amount of PTFE binder; wherein said N,N′-tetrahalo derivative is one selected from the group consisting of N,N′-tetrachloro, N,N′-tetrafluoro and interhalogen combinations thereof.

4,621,037

METHOD FOR DETECTING ENDPOINT OF DEVELOPMENT

Kaoru Kanda, and Kunihiko Kanda, both of Yokohama, Japan, assignors to Sigma Corporation, Kawasaki, Japan

Filed Jul. 8, 1985, Ser. No. 752,714
Claims priority, application Japan, Jul. 9, 1984, 59-140551; Jan. 21, 1985, 60-007365; Jun. 5, 1985, 60-122332
Int. Cl.⁴ G03C *5/24;* B60S *1/52*
U.S. Cl. 430—30 **8 Claims**



1. A method for detecting an endpoint of development comprising the steps of:

forming a resist layer on a conductive layer formed on a substrate;

exposing the resist layer by using light, X-rays, or an electron beam;

forming one electrode by connecting a connector, including a first conductive material, to said conductive layer through the exposed resist layer on the substrate;

dipping said one electrode and spaced therefrom another electrode including a second conductive material into a developing solution to start development of the exposed resist layer which results in chemical changes in the solution causing a battery action and producing a current flowing between said electrodes;

developing a voltage solely from said current; and

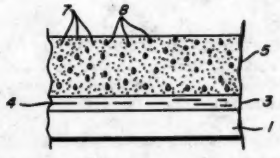
monitoring said voltage while the development of said exposed resist layer continues to determine the endpoint of the development of resist.

4,621,038

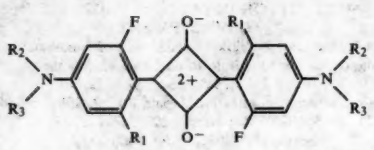
PHOTOCONDUCTIVE IMAGING MEMBERS WITH NOVEL SYMMETRICAL FLUORINATED SQUARAINE COMPOUNDS

Peter M. Kazmaier; Giuseppa Baranyi, both of Mississauga, and Rafik O. Loutfy, Willowdale, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 24, 1985, Ser. No. 748,285
The portion of the term of this patent subsequent to Jun. 4, 2002, has been disclaimed.
Int. Cl.⁴ G03G *5/06, 5/14*
U.S. Cl. 430—59 **40 Claims**



1. An improved photoresponsive imaging member comprised of (1) a supporting substrate, (2) a photoconductive layer comprised of symmetrical fluorinated squaraine compounds of the following formula



wherein the R_1, R_2 and R_3 substituents are independently selected from the group consisting of alkyl, aryl, and heterocyclic substituents, and (3) an aryl diamine hole transport layer.

4,621,039

DEVELOPER COMPOSITIONS WITH FAST ADMIXING CHARACTERISTICS

Roger N. Ciccarelli, Rochester, and Denise R. Leon, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 18, 1984, Ser. No. 683,107
Int. Cl.[4] G03G *9/10*
U.S. Cl. 430—106 **35 Claims**

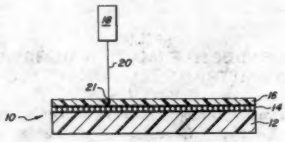
1. An improved toner composition comprised of resin particles, and pigment particles surface treated with charge enhancing additives the additive being present as a continuous coating on the outer surface of the pigment particles, and being selected from the group consisting of homopolymers of amine containing monomers, copolymers containing amine monomers, quaternary ammonium salt compounds, polymeric amines, polymeric quaternary ammonium compounds, telomeric amines and telomeric quaternary ammonium salt compositions, and wherein the charge enhancing additives are associated with the pigment particles.

4,621,040

IMAGING ELEMENT AND PROCESS WITH LASER ABSORPTIVE INK BARRIER LAYER

Michael S. Viola, Burlington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 21, 1985, Ser. No. 789,666
Int. Cl.[4] G03C *1/72, 5/00*
U.S. Cl. 430—138 **31 Claims**



1. An imaging element consisting essentially of a support carrying on the first surface, in sequence, a layer of microcapsules containing an ink, and a laser-absorpitve, ink barrier layer, said barrier layer adapted to permit ink to penetrate therethrough upon contact with an exposing laser beam.

4,621,041

LITHOGRAPHIC PRINTING PLATE

Masahiko Saikawa, Nagoya; Eiji Kanada, and Kazunaka Endo, both of Nagaokakyo, all of Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Jul. 11, 1984, Ser. No. 629,971
Claims priority, application Japan, Jul. 14, 1983, 58-128217
The portion of the term of this patent subsequent to Feb. 26, 2002, has been disclaimed.
Int. Cl.[4] G03C *5/54, 1/02, 1/06;* G03F *7/02*
U.S. Cl. 430—204 **17 Claims**

1. A method for plate-making which comprises image-wise exposing by scanning flash exposure a lithographic printing plate comprising a support, a physical development nuclei containing surface layer and at least an unfogged silver halide emulsion layer containing at least 70 mol % of silver chloride and prepared with addition of a water soluble iridium compound during emulsification or physical ripening of the emulsion and a water soluble gold compound at any time before coating of the emulsion and thereafter subjecting the exposed emulsion to diffusion transfer development.

4,621,042

ABSORPTIVE PLANARIZING LAYER FOR OPTICAL LITHOGRAPHY

Thomas R. Pampalone, Morris County, and James J. Di Piazza, Mercer County, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Aug. 16, 1985, Ser. No. 766,285
Int. Cl.[4] G03C *1/76;* B05D *3/02*
U.S. Cl. 430—271 **10 Claims**

1. In a multilayer structure suitable for optical lithography comprising a substrate having topographical features, a layer of planarizing material thereover and a layer of photoresist material overlying the layer of planarizing material, wherein the planarizing material absorbs light at the wavelengths useful to irradiate the photoresist layer, the improvement wherein the planarizing material consists essentially of pure o-cresol novolac resin.

4,621,043

STORAGE STABLE PHOTOPOLYMERIZABLE COMPOSITION

Joseph E. Gervay, Red Bank, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 31, 1983, Ser. No. 462,403
Int. Cl.[4] G03C *1/68*
U.S. Cl. 430—281 **15 Claims**

1. A storage stable photopolymerizable composition comprising polymeric acid binder, monomer and photoinitiator with said composition containing an aldehyde condensation resin precursor whereby said precursor forms a crosslinkable aldehyde condensation resin in the presence of the acid binder which has an acid number of at least 45 and a pKa value of at least 5 whereby said photopolymerizable composition can be laminated to a support and held for two weeks at 40° C. without any substantial amount of crosslinking, said pKa value measured in a 1:1 volume ratio of methanol to water.

4,621,044

PHOTOSENSITIVE POLYMER COMPOSITION

Junichi Fujikawa, Kyoto, Japan, assignor to Toray Industries, Inc., Tokyo, Japan

Continuation of Ser. No. 445,696, Dec. 1, 1982, abandoned. This application Apr. 4, 1985, Ser. No. 719,636
Claims priority, application Japan, Dec. 10, 1981, 56-198869; Jan. 26, 1982, 57-9536
Int. Cl.[4] G03C *1/68*
U.S. Cl. 430—281 **18 Claims**

1. A printing plate comprising a photosensitive polymer composition layered on a support, said photosensitive composition comprising:

A. 100 parts by weight of unsaturated partially saponified polyvinyl acetate having a saponification degree of 60 to 99 mole % and having glycidyl methacrylate addition-bonded to the terminal carboxyl groups thereof;

B. 20 to 200 parts by weight of polyfunctional component selected from the group consisting of acrylates and methacrylates having a molecular weight of not more than 2000 and having at least two acryloyl or methacryloyl groups in the same molecule thereof and at least one hydroxy group, the number of said acryloyl and methacryoyl groups being at least equal to the number of hydroxyl groups in the same molecule thereof;

C. 1 to 60 parts by weight of a saturated compound having

a molecular weight of not more than 1000 and a boiling point of not less than 150° C. and having at least one hydroxyl group in the molecule thereof; and

D. 0.1% to 10% by weight, based on the total weight of the composition, of a photosensitizer.

4,621,045

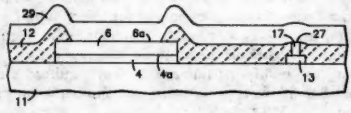
PILLAR VIA PROCESS

Willis R. Goodner, Chandler, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 3, 1985, Ser. No. 740,790

Int. Cl.[4] B44C *1/22*

U.S. Cl. 430—311 **10 Claims**



1. A process for forming multi-layer conductors connected by conductive pillars, comprising:

providing a substrate;

applying a first conductor layer on said substrate, wherein said first conductor layer includes a first interconnect region and a bonding region;

forming a conductive pillar on said first interconnect region;

coating said substrate, bonding region, and pillar with a dielectric planarizing layer having a first thickness over said substrate, a second thickness over said bonding region, and a third thickness over said pillar, wherein said third thickness is less than said first and second thicknesses;

removing a portion of said planarizing layer to expose a central part of said bonding region while leaving said first interconnect region and said pillar covered;

uniformly etching said planarizing layer to expose an upper surface of said pillar; and

applying a second conductive layer over said remaining planarizing layer and in contact with said upper surface of said pillar.

4,621,046

PYRAZOLO(1,5-B)-1,2,4-TRIAZOLE DERIVATIVES

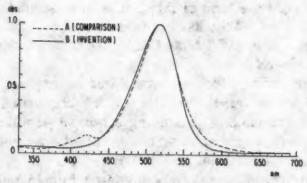
Tadahisa Sato; Toshio Kawagishi, and Nobuo Furutachi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 590,818, Mar. 19, 1984, Pat. No. 4,540,654. This application Feb. 19, 1985, Ser. No. 702,691

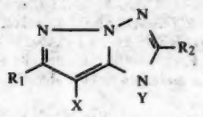
Claims priority, application Japan, Mar. 18, 1983, 58-45512; Feb. 16, 1984, 59-27745

Int. Cl.[4] C07D *257/04, 257/10, 403/04, 487/02*

U.S. Cl. 430—381 **8 Claims**



1. A novel pyrazolo[1,5-b]-1,2,4-triazole derivative compound represented by general formula (I):



(I)

wherein R_1 and R_2 are independently a hydrogen atom or a substituent; X is a hydrogen atom or a group capable of being released upon coupling; Y represents a hydrogen atom or an aralkyl group.

4,621,047

METHOD FOR PROCESSING COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

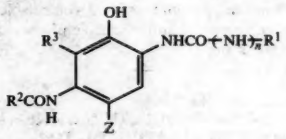
Shinzo Kishimoto; Akira Abe, and Shigeru Ohno, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 21, 1985, Ser. No. 736,625

Int. Cl.[4] G03C *7/32, 5/44*

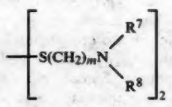
U.S. Cl. 430—393 **24 Claims**

1. A method for processing a color photographic light-sensitive material comprising subjecting an image-wise exposed silver halide color photographic light-sensitive material to color development processing, then to processing with a bleaching solution and thereafter to separately fixing processing, wherein the silver halide color photographic light-sensitive material contains a cyan dye forming coupler represented by general formula (I-a) and the bleaching solution contains a compound represented by general formula (II-a):



(I-a)

wherein R^1 and R^2 each represents a substituted or unsubstituted aliphatic group, a substituted or unsubstituted aryl group or a substituted or unsubstituted heterocyclic group; R^3 represents a hydrogen atom; a halogen atom, a substituted or unsubstituted aliphatic group, a substituted or unsubstituted aryl group or an acylamino group, or R^3 represents a nonmetallic atomic group necessary to form a nitrogen-containing 5-membered or 6-membered ring together with R^2; Z^1 represents a hydrogen atom or a group capable of being released upon the oxidative coupling reaction with a developing agent; and n represents 0 or 1,



(II-a)

wherein R^7 and R^8, which may be the same or different, each represents a hydrogen atom, a substituted or unsubstituted lower alkyl group or an acyl group, or R^7 and R^8 connect to each other to form a ring; and m represents an integer of 1 to 3.

4,621,048

REAGENTS CONTAINING AN ANTI-LIGAND BOUND TO AN ANTI-ENZYME AND METHODS FOR EMPLOYING SAID REAGENTS IN AN IMMUNOASSY

Yoshihiro Ashihara; Hiromasa Suzuki, and Yasushi Kasahara, all of Tokyo, Japan, assignors to Fujirebio Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 12, 1984, Ser. No. 588,682
Claims priority, application Japan, Mar. 11, 1983, 58-38975; Mar. 29, 1983, 58-51494; Mar. 29, 1983, 58-51495
Int. Cl.[4] G01N *33/536*
U.S. Cl. 435—5 29 Claims

1. A method of detecting the presence of a ligand in a biological sample suspected of containing said ligand comprising:

(a) combining in a buffered solution said biological sample; an enzyme or enzyme complex, said enzyme complex comprising an enzyme bound to a first macromolecular compound; a substrate for said enzyme; and an antibody complex, said antibody complex comprising anti-ligand bound to anti-enzyme and a second macromolecular compound bound to at least one of said anti-ligand and said anti-enzyme;

(b) measuring the activity of said enzyme or enzyme complex in said buffered solution; and

(c) comparing the activity of said enzyme or enzyme complex in said buffered solution with the enzyme activity of a standard solution containing a known amount of said ligand.

4,621,049

ENZYMATIC HIGH RANGE GLUCOSE TEST

Joseph Y. Wang, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Nov. 19, 1984, Ser. No. 673,183
Int. Cl.[4] C12Q *1/54*
U.S. Cl. 435—14 12 Claims

1. A test composition for the semiquantitative determination of high range glucose in an aqueous test sample, comprising; glucose oxidase, a peroxidatively active component, a chromogenic indicator system capable of providing a detectable colorimetric response and a borate buffer capable of providing an initial pH above about pH 7.

4,621,050

PROCESS FOR THE PRODUCTION OF HUMAN COLONY-STIMULATING FACTOR

Kaname Sugimoto, Okayama, Japan, assignor to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Continuation-in-part of Ser. No. 329,118, Dec. 9, 1981, abandoned. This application Mar. 5, 1984, Ser. No. 585,617
Claims priority, application Japan, Dec. 31, 1980, 55-185732
Int. Cl.[4] C12P *21/00*; C12N *15/00, 5/00, 5/02*
U.S. Cl. 435—68 25 Claims

1. In a process for producing human colony stimulating factor (hCSF) which comprises culturing human cells capable of producing hCSF on a culture medium under conditions appropriate to accumulate a substantial amount of hCSF, and recovering the accumulated hCSF from the culture, the improvement whereby the hCSF production can be extremely enhanced, wherein said human cells capable of producing hSCF are obtained by the process comprising:

implanting hCSF-producing hybridoma cells, which are hybrids of hCSF-producing human cells and human lymphoblastoid cells, in an immunodeficient or immunosuppressed non-human warm-blooded animal;

feeding the animal to allow said hybridoma cells to utilize the nutrient body fluid of the animal for their multiplication; and

extracting and disaggregating the resultant rumor, formed in the animal, to obtain the multiplied hybridoma cells.

4,621,051

PROCESS FOR THE PRODUCTION OF HUMAN MULTIPLICATION-STIMULATING ACTIVITY

Kaname Sugimoto, Okayama, Japan, assignor to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Continuation-in-part of Ser. No. 329,119, Dec. 9, 1981, abandoned. This application Mar. 5, 1984, Ser. No. 585,618
Claims priority, application Japan, Dec. 31, 1980, 55-185731
Int. Cl.[4] C12P *21/00*; C12N *15/00, 5/00, 5/02*
U.S. Cl. 435—68 21 Claims

1. A process for producing human multiplication-stimulating activity (hMSA), comprising:

implanting human tumor forming cells capable of producing hMSA in a non-human warm-blooded animal;

feeding the animal to allow said human cells to utilize the nutrient body fluid of the animal for their multiplication;

extracting and disaggregating the resultant tumor, formed in the animal, to obtain the multiplied human cells;

culturing the multiplied human cells on a culture medium under conditions appropriate to accumulate a substantial amount of hMSA; and

recovering the accumulated hMSA from the culture.

4,621,052

PROCESS FOR THE PRODUCTION OF HUMAN EPIDERMAL GROWTH FACTOR

Kaname Sugimoto, Okayama, Japan, assignor to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Continuation-in-part of Ser. No. 322,185, Nov. 17, 1981, abandoned. This application Jun. 14, 1984, Ser. No. 619,708
Claims priority, application Japan, Dec. 11, 1980, 55-174854
Int. Cl.[4] C12P *21/00*; C12N *15/00, 5/00, 5/02*
U.S. Cl. 435—68 21 Claims

1. A process for producing human epidermal growth factor (hEGF), comprising:

culturing human tumor forming cells capable of producing hEGF on a culture medium under conditions appropriate to accumulate a substantial amount of hEGF; and

recovering the accumulated hEGF from the culture.

4,621,053

PROCESS FOR THE PRODUCTION OF HUMAN PEPTIDE HORMONES

Kaname Sugimoto, Okayama, Japan, assignor to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Continuation-in-part of Ser. No. 281,941, Jul. 10, 1981, abandoned, Ser. No. 281,942, Jul. 10, 1981, abandoned, Ser. No. 290,864, Aug. 7, 1981, abandoned, Ser. No. 322,184, Nov. 17, 1981, abandoned, Ser. No. 325,033, Nov. 25, 1981, abandoned, Ser. No. 329,116, Dec. 9, 1981, abandoned, Ser. No. 329,117, Dec. 9, 1981, abandoned, and Ser. No. 329,120, Dec. 9, 1981, abandoned. This application Feb. 27, 1984, Ser. No. 584,017
Claims priority, application Japan, Jul. 30, 1980, 55-104726; Jul. 31, 1980, 55-105273; Aug. 22, 1980, 55-114680; Dec. 13, 1980, 55-176185; Dec. 19, 1980, 55-180241; Dec. 30, 1980, 55-187012; Dec. 30, 1980, 55-187811; Dec. 30, 1980, 55-187010
The portion of the term of this patent subsequent to May 10, 2000, has been disclaimed.
Int. Cl.[4] C12P *21/00*; C12N *15/00, 5/00, 5/02*
U.S. Cl. 435—68 58 Claims

1. In the process for producing human peptide hormone, excluding human erythropoietin, which comprises culturing human cells capable of producing a human peptide hormone on an in vitro nutrient medium under conditions appropriate to accumulate a substantial amount of the human peptide hormone, and recovering the accumulated human peptide hormone from the culture, the improvement, by which the amount of human peptide hormone produced during said in vitro culturing is substantially increased, comprising using as said

human cells capable of producing a human peptide hormone, cells obtained by a process comprising:

implanting a human×human hybridoma lymphoblastoid cell line capable of producing said human peptide hormone in a non-human warm-blooded animal;

feeding the animal to allow said human hybridoma cell line to utilize the nutrient body fluid of the animal for its multiplication; and

extracting and disaggregating the resultant tumor, formed in the animal, for use in the in vitro production of said human peptide hormone.

4,621,054
BIOLOGICALLY ACTIVE SUBSTANCE, PROCESS FOR PREPARING THE SUBSTANCE AND IMMUNOACTIVE COMPOSITION

Naoyoshi Suzuki, Tokyo; Tsuneo Hirose, Obihiro, and Humio Osaki, Tokushima, all of Japan, assignors to Otsuka Pharmaceutical Factory, Inc., Japan

Division of Ser. No. 349,608, Feb. 17, 1982, Pat. No. 4,482,543. This application Dec. 9, 1983, Ser. No. 559,760

Claims priority, application Japan, Feb. 27, 1981, 56-28553

Int. Cl.[4] C12P *21/06;* **C12R** *1/90;* **A61K** *39/00, 37/00*

U.S. Cl. 435—69 **10 Claims**

1. A process for preparing a biologically active substance which is a glycoprotein having a molecular weight of 3,000 to 5,000 as determined by a gel filtration method and having activity to inhibit toxoplasma multplication not only in homologous cells but also in heterologous cells, and further having the following physical and chemical properties:

(a) solubility: freely soluble in water and practically insoluble in methanol, ethanol, ehter, benzene, chloroform and acetone;

(b) constituent amino acid of protein portion: aspartic acid, threonine, serine, glutamic acid, glycine, alanine, cystine, valine, methionine, isoleucine, leucine, tyrosine, phenylalanine, lysine, tryptophan, histidine, arginine and proline;

(c) aspartic acid, glutamic acid and lysine contents in total amino acids: 45 to 65% by weight;

(d) pH; 7.0 to 7.2 (1 W/V % aqueous solution);

(e) thermal stability: when 1 W/V % aqueous solution of the substance is heated at 60°±0.1° C. for 30 minutes, the solution still retains the immunoactivity to inhibit toxoplasma multiplication in homologous cells and heterologous cells;

(f) IR adsorption: characteristic adsorption at the following wave number (cm^{-1}): 3600–2900 (strong), 1700–1500 (strong), 1440–1380 (medium), 1160–1080 (medium), and 550 (medium);

(g) UV absorption: maximum absorption is found at 274–276 nm for 0.1 W/V % aqueous solution;

(h) color reaction: positive Lowry-Folin process, Ninhydrin reaction, Phenol-sulfuric acid reaction and Elso-Morgan's reaction;

(i) color and appearance: white and amorphous; the process comprising the steps of contacting at least one starting material selected from the group consisting of

(A) blood plasma or serum obtained from a mammal hyperimmunized with a protozoan selected from the group consisting of Toxoplasma, Plasmodium and Babesia,

(B) a culture supernatant of spleen cells from a mammal hyperimmunized with said protozoan, and

(C) a culture supernatant of spleen cells from a normal mammal incubated in the presence of at least one of the supernatant (B) and a protozoan lysate antigen selected from the group consisting of Toxoplasma lysate antigen (TLA), Plasmodium lysate antigen (PLA) and Babesia lysate antigen (BLA); with a proteolytic enzyme at a concentration and for a time sufficient to liberate said glycoprotein from said starting material, heating the resulting lysate to inactivate the enzyme, separating and isolating said glycoprotein from the lysate.

4,621,055
PROCESS FOR PRODUCING BIOLOGICALLY ACTIVE FACTORS

Karl Theurer, Brunnwiesenstrasse 23, 7302 Ostfildern 1 (Ruit), Fed. Rep. of Germany

Continuation-in-part of Ser. No. 415,989, Sep. 8, 1982, abandoned, which is a continuation of Ser. No. 202,799, Jan. 3, 1980, abandoned. This application Apr. 5, 1983, Ser. No. 482,257

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1979, 2944277; Nov. 2, 1979, 2944278; European Pat. Off., Oct. 7, 1980, 80 106 066.6; Japan, Oct. 31, 1980, 55-152382

Int. Cl.[4] C12P *21/06*

U.S. Cl. 435—69 **4 Claims**

1. A process for the concentration of biologically active factors having an inhibiting effect on the growth of neoplastic cells from cell homogenates of fetal or juvenile tissues or body fluids which contain said biologically active factors, which comprises the steps of:

(a) non-destructively sterilizing said cell homogenates with an acid or diethylamine;

(b) separating the components of cell nucleus and cytoplasmic components from the sterilized starting material;

(c) enzymatically decomposing lipids and carbohydrates which are obtained from step (b) with an enzyme selected from the group consisting of lipase, proteinase and peptidase;

(d) separating the cell substrate and recovering a factor having a molecular weight from about 600 to about 1,000,000;

(e) forming a conjugate with DNA isolated from a cell homogenate with an inert carrier and forming a biologically active affinity sorbent means responsive to selective separation with said conjugate;

(f) selectively separating said biologically active factors by elution on said affinity sorbent, and then

(g) separating said biologically active factors from said affinity sorbent by electrophoresis or by a buffer solution, whereby an enriched amount of said biologically active factors is recovered.

4,621,056
PROCESS FOR PRODUCING STABLE SULPHO-ADENOSYL-L-METHIONINE SALTS

Federico Gennari, Truccazzano, Italy, assignor to Bioresearch S.p.A, Milan, Italy

Filed Aug. 2, 1984, Ser. No. 637,051

Claims priority, application Italy, Aug. 24, 1983, 22622 A/83

Int. Cl.[4] C12P *19/28;* **C07H** *19/06*

U.S. Cl. 435—85 **3 Claims**

1. A process for producing stable salts of SAMe from yeast concentrates which contain it, comprising:

(a) adjusting the SAMe concentration in the starting yeast to 12–20 g/kg of moist yeast;

(b) preparing a lysate of high SAMe concentration from the enriched yeast obtained from step (a) by treating the same with water and ethyl acetate quantities of between 1/20 and 1/5 of weight of the moist cell for a time of between 15 and 45 minutes and subsequently with H_2SO_4 at a concentration between 0.1 N and 0.5 N;

(c) subjecting the lysate obtained from step (b) to ultrafiltration carried out with membrane of 10,000 M.W. nominal cut-off to obtain a filtered liquid;

(d) passing the filtered liquid maintained at pH between 3.5 and 7, through a weak acid ion-exchange resin of —COOH type, in the H^+ form, said resin having particle size between 100 and 200 mesh, and subsequently eluting SAMe with aqueous solution 0.2 N of a strong acid;

(e) passing the eluate obtained from step (d) through an absorption polymer selected from the group consisting of polystyrene and acrylic esters, at a rate of between 0.2 and 1 volume of liquid/hour per volume of resin;

(f) subjecting the eluate obtained from step (e) to reverse osmosis with high NaCl rejection reverse osmosis desali-

nation membranes, until a SAMe content of 100–200 g/l is obtained in the concentrate, and subsequently treating the concentrated SAMe solution with a stoichiometric quantity of acid in order to transform it totally into the required SAMe salt; and

(g) drying the concentrated solution of SAMe salt in a spray-dryer, wherein the air has inlet temperature between 140° and 200° C. and outlet temperature between 40° and 100° C.

4,621,057

N-ACETYLHEXOSAMINE OXIDASE AND PROCESS FOR PRODUCING THE SAME

Tatsuo Horiuchi, Noda, Japan, assignor to Noda Institute for Scientific Research, Japan

Filed Feb. 15, 1984, Ser. No. 580,243

Claims priority, application Japan, Feb. 28, 1983, 58-30801

Int. Cl.[4] C12N *9/06*; C12R *1/38*

U.S. Cl. 435—191 **4 Claims**

1. An N-acetylhexosamine oxidase having the following physicochemical properties:

(1) action and specificity for substrate

oxidizes N-acetylhexosamines including N-acetylglucosamine, N-acetylgalactosamine, N-acetylmuramic acid, N,N-diacetylchitobiose and N-acetylmannosamine in the presence of oxygen to form N-acetylhexosaminic acid and hydrogen peroxide

(2)optimum pH and stable pH range

when using a potassium phosphate buffer solution containing 0.1M glycine, said N-acetylhexosamine oxidase exhibits an optimum pH of 7.5 to 8.5 and a stable pH range of 3 to 9

(3) molecular weight

has a molecular weight of about 140,000 to 150,000 when measured according to a gel filtration method using Sephadex G-200 by the use of 0.05M potassium phosphate buffer solution.

4,621,058

METHOD OF PREPARING CHEESE STARTER MEDIA

Malireddy S. Reddy, Aurora, Colo., assignor to Mid-America Dairymen, Inc., Springfield, Mo.

Continuation-in-part of Ser. No. 483,508, Apr. 11, 1983, abandoned. This application Apr. 9, 1984, Ser. No. 597,051

Int. Cl.[4] C12N *1/20*; A23C *19/00, 21/02*

U.S. Cl. 435—253 **10 Claims**

1. A method of making a dried, reconstitutable, bacteriophage-resistant starter medium for cheese-making microorganisms, said method comprising the step of:

providing a quantity of liquid nutrient for said microorganisms including a major proportion of whey;

preparing, separately from said quantity of nutrient, a liquid preblend having a phosphate anti-bacteriophage agent dispersed therein;

adding said liquid preblend to said nutrient to form a liquid mixture, and allowing said agent to react with available calcium ion in said mixture, said reaction step comprising the step of agitating the liquid mixture for a period of from about 1 to 12 hours; and

drying the reacted mixture to form a substantially uniform and homogeneous, flowable, dried starter medium.

4,621,059

APPARATUS FOR MEASURING VELOCITY OF ENZYME REACTION

Kyuji Rokugawa, Ootawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 5, 1985, Ser. No. 708,509

Claims priority, application Japan, Mar. 5, 1984, 59-40567

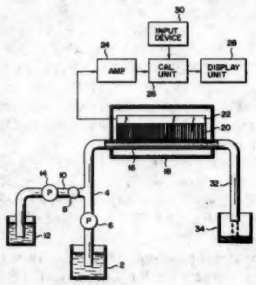
Int. Cl.[4] C12M *1/34*

U.S. Cl. 435—291 **11 Claims**

1. An apparatus for measuring the velocity of an enzyme reaction wherein chemical substances react in the presence of catalyst of an enzyme comprising:

a capillary column in which the enzyme is immobilized;

solution supplying means for pumping a solution containing chemical substances and a luminescent substance in the capillary column in which, when the solution flows through the column, the enzyme reaction is proceeded by the catalytic action of the enzyme and the reaction product and the luminescent substance react to emit light;



detecting means for detecting the luminescence in the capillary column to output a signal relative to the distribution of a luminescent intensity along the longitudinal direction of the column; and

a calculation unit inputting an output signal of the detecting means for calculating the enzyme activity or the quantity of the chemical substances from the distribution of the luminescent intensity along the longitudinal direction of the capillary column by an end assay and/or a rate assay.

4,621,060

APPARATUS FOR TAKING SAMPLES FROM A FERMENTER

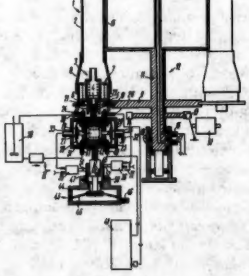
Jury V. Redikultsev, and Mikhail G. Maximov, both of Puschino Moskovskaya, U.S.S.R., assignors to Institut Biokhimii I Fiziologii Mikroorganizmov Akademii Nauk SSSR, Puschino, U.S.S.R.

PCT No. PCT/SU82/00026, § 371 Date Mar. 23, 1984, § 102(e) Date Mar. 23, 1984, PCT Pub. No. WO84/00559, PCT Pub. Date Feb. 16, 1984

PCT Filed Jul. 30, 1982, Ser. No. 598,340

Int. Cl.[4] C12M *1/26, 1/00*; C12Q *1/24*; G01N *1/00*

U.S. Cl. 435—292 **2 Claims**



1. An apparatus for taking samples from a fermenter having an outlet, comprising:

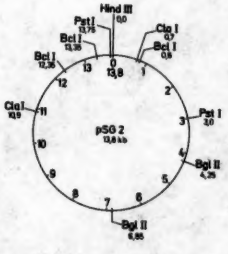
a first by-pass valve provided at the outlet of a fermenter;

a sampler having an inlet and an axis;
a second valve provided at the inlet of said sampler and having a housing;
a shut-off member of said second valve provided in said housing to move along the axis of said sampler;
a separating chamber provided between said first and second valves;
an outlet sleeve of said separating chamber located along said axis of said sampler;
a nipple provided in said chamber to feed a sterilizing agent thereinto;
a third valve provided between said nipple and said chamber;
a fourth valve provided at said inlet of said sampler;
a housing of said fourth valve provided coaxially to said housing of the second valve;
said housing of the second valve having an annular projection functioning as a shut-off member of said fourth valve;
said separating chamber being reciprocable in a direction of movement of said shut-off member of the second valve to first and second extreme positions and an intermediate position;
all of said valves being closed in said first extreme position;
the outlet sleeve of said chamber simultaneously engaging said housing of the second and fourth valves in said second extreme position to form a hermetic passage in which the sterilizing agent is supplied to said sampler through said second valve and evacuated through said fourth valve; and
the outlet sleeve of the chamber engaging only said shut-off member of the second valve in said intermediate position to form a hermetic passage for providing communication between said fermenter and said sampler.

4,621,061
PLASMID P SG 2 AND PROCESS FOR ITS PREPARATION

Alfred Pühler; Wolfgang Wohlleben, both of Bielefeld, and Michael Leineweber, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 372,751, Apr. 28, 1982. This application Dec. 13, 1983, Ser. No. 560,312
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1981, 3117131
Int. Cl.[4] C12N *1/00, 15/00*
U.S. Cl. 435—320 **3 Claims**

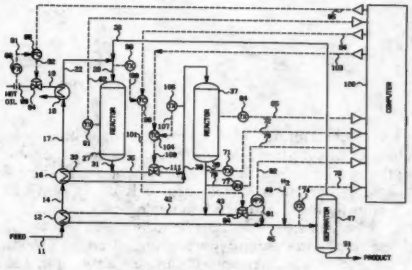


1. Plasmid pSG2 which is isolated from *Streptomyces ghanaensis* ATCC 14,672 and has a molecular weight of 9.2 megadaltons, a contour lenght of 4.58 μm and a molecular length of about 13.8 kilobases and which is not fragmented by the restriction endonucleases EcoR I, BamH I, Sal I, Hpa I and Hind III, but is cleaved by the restriction endonuclease Hind III into a fragment with a length of about 14 kb, by Cla I into two fragments with lengths of 10.15 and 3.65 kb, by Pst I into two fragments with lengths of 10.85 and 3.0 kb, by Bgl II into two fragments with lengths of 11.25 kb and 2.6 kb, and by Bcl I into three fragments with lengths of 11.6 kb, 1.25 kb and 1.0 kb.

4,621,062
CONTROL OF AN ISOMERIZATION PROCESS

William S. Stewart, and John E. Blaesi, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 27, 1984, Ser. No. 604,810
Int. Cl.[4] G01N *35/00;* **G05B** *1/00, 1/06, 23/00*
U.S. Cl. 436—55 **20 Claims**



1. In method for controlling an isomerization process comprising the steps of introducing a feed suitable for isomerization to a feed inlet of a first isomerization reactor, withdrawing a first reaction effluent from said first isomerization reactor, introducing said effluent as a feed to a second isomerization reactor, and withdrawing a second reaction effluent from said second isomerization reactor, wherein the improvement comprises the steps of:
establishing a first signal representative of the actual temperature of said second reaction effluent;
establishing a second signal representative of the actual octane number of said second reaction effluent;
establishing a third signal representative of the temperature of said second reaction effluent required to maintain the isomerization reaction in said second isomerization reactor at equilibrium in response to said first signal and said second signal; and
manipulating the temperature of said second reaction effluent in response to said third signal.

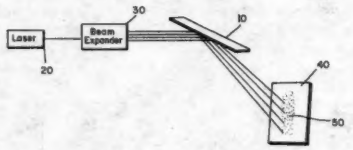
11. Apparatus comprising:
a first isomerization reactor including a feed inlet and an effluent outlet;
a second isomerization reactor including a feed inlet and an effluent outlet;
means for providing a feed suitable for isomerization to said feed inlet within said first isomerization reactor;
means for withdrawing a first reaction effluent from said first isomerization reactor and for providing said first reaction effluent as a feed to said second isomerization reactor;
means for withdrawing a second reaction effluent from said second isomerization reactor;
means for establishing a first signal representative of the actual temperature of said second reaction effluent;
means for establishing a second signal representative of the actual octane number of said second reaction effluent;
means for establishing a third signal representative of the temperature of said second reaction effluent required to maintain the isomerization reaction in said second isomerization reactor at equilibrium in response to said first signal and said second signal; and
means for manipulating the temperature of said second reaction effluent in response to said third signal.

4,621,063

METHODS FOR THE DETECTION AND QUANTITATION OF IMMUNOLOGICAL SUBSTANCES

Philip J. Wyatt, Santa Barbara, and Alberto F. Lopapa, Los Angeles, both of Calif., assignors to The Center for Immunological Studies, Los Angeles, Calif.

Filed Oct. 12, 1982, Ser. No. 433,732
Int. Cl.[4] G01N *33/543*
U.S. Cl. 436—501 30 Claims



1. A method for detecting the presence of an immunological substance in a medium, said method comprising the steps of:

(a) preparing a water insoluble polymeric surface by affixing thereto a material which chemically reacts with and specifically binds with the immunological substance sought to be detected; said affixing being effected by groups selected from the group consisting of amino groups, hydroxyl groups, mercapto groups, amido groups, and carboxyl groups;

(b) washing said prepared surface derived from step (a) to substantially remove unbound material;

(c) drying said prepared surface derived from step (b);

(d) impinging said prepared surface with a source of coherent or partially coherent radiation;

(e) measuring a pattern of radiation scattered from said prepared surface;

(f) reacting said prepared surface with a medium that may contain said immunological substance sought to be detected;

(g) washing said prepared surface derived from step (f) to substantially remove excess medium;

(h) drying said prepared surface derived from step (g);

(i) impinging the reacted prepared surface derived from step (h) with substantially the same radiation at substantially the same aspect and orientation utilized to perform step (d);

(j) measuring a pattern of radiation scattered from said reacted prepared surface;

(k) recording said patterns of radiation derived from steps (e) and (j); and

(l) comparing said patterns of radiation derived from steps (e) and (j) to determine any differentiations therebetween.

4,621,064

LOW TEMPERATURE SEALING COMPOSITION WITH SYNTHETIC ZIRCON

Ichiro Matsuura, and Fumio Yamaguchi, both of Shiga, Japan, assignors to Nippon Electric Glass Company, Limited, Otsu, Japan

Filed Mar. 18, 1985, Ser. No. 713,000
Claims priority, application Japan, Mar. 19, 1984, 59-52822
Int. Cl.[4] C03C *8/24*
U.S. Cl. 501—15 6 Claims

1. A low temperature sealing composition which radiates no α-rays, consisting of a powdery mixture of 50 -80 wt% glass powder, said glass being vitreous PbO-B_2O_3 solder glass containing substantially no radioactive substances and having a deformation point of 350° C. or less, 1-35 wt% inert zinc material powder, said zinc material consisting of ZnO, SiO_2 and Al_2O_3, and 1-35 wt% synthetic zircon artificially prepared substantially to exclude radioactive substances present in natural zircon.

6. A low temperature sealing composition as claimed in claim 1, wherein said synthetic zircon is a chemical compound produced by treating zircon sand by alkali fusion to make sodium zirconate, dissolving said sodium zirconate in hydrochloric acid aqueous solution to make zirconium hydrochloric acid solution, subjecting said solution to recrystallization to obtain zirconium oxychloride, treating said zirconium oxychloride with sodium hydroxide to form zirconium hydroxide, baking said zirconium hydroxide to form zirconium oxide, mixing said zirconium oxide with silica sand, and baking said mixture of said zirconium oxide and said silica sand at 1200° C. using a fusing agent to form the synthetic zircon.

4,621,065

CHRYSOBERYL CAT'S-EYE SYNTHETIC SINGLE CRYSTAL

Mineo Isogami, Uji, and Ryosuke Nakata, Kyoto, both of Japan, assignors to Kyocera Corporation, Kyoto, Japan

Filed Sep. 21, 1984, Ser. No. 653,950
Claims priority, application Japan, Sep. 24, 1983, 58-176814
Int. Cl.[4] C04B *35/44;* C30B *29/20, 29/16*
U.S. Cl. 501—86 8 Claims

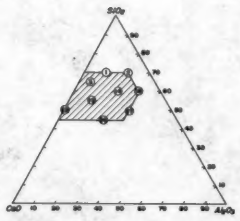
1. A chrysoberyl cat's-eye synthetic single crystal, which consists essentially of 79.5 to 81.8% by weight, based on the total crystal, of aluminum oxide, 18.2 to 21.5% by weight, based on the total crystal, of beryllium oxide, 0.005 to 1.050% by weight, based on the total crystal, of at least one member selected from the oxide of iron, cerium, vanadium, cobalt, tungsten, chromium, nickel and manganese, and 0.005 to 2.0% by weight, based on the total crystal, of at least one member selected from oxides of tin, zirconium and germanium.

4,621,066

LOW TEMPERATURE FIRED CERAMICS

Susumu Nishigaki; Shinsuke Yano, and Shirohito Matsuyama, all of Nagoya, Japan, assignors to Narumi China Corporation, Nagoya, Japan

Filed Mar. 27, 1985, Ser. No. 716,722
Claims priority, application Japan, Jun. 1, 1984, 59-110973
Int. Cl.[4] C04B *35/02;* C03C *10/06*
U.S. Cl. 501—128 8 Claims



1. A partially crystallized ceramic article which has been prepared by firing at a temperature of from 800° to 1000° C., a mixture consisting essentially of, in weight percentages:

(a) 50 to 65% of powdered, noncrystalline, glass consisting of

10 to 55% of CaO,

45 to 70% of SiO_2,

0 to 30% of Al_2O_3, and up to 10% of impurities; and

(b) 50 to 35% of powdered Al_2O_3 containing up to 10% of impurities.

4,621,067

DIELECTRIC CERAMIC COMPOSITION

Ryozo Kitoh, and Harumi Ikezawa, both of Ube, Japan, assignors to UBE Industries, Ltd., Yamaguchi, Japan

Filed Dec. 26, 1984, Ser. No. 686,273
Claims priority, application Japan, Dec. 26, 1983, 58-243749
Int. Cl.[4] C04B *35/46*
U.S. Cl. 501—136 4 Claims

1. A dielectric ceramic composition consisting essentially of oxides of strontium, zinc, niobium, and titanium, which is represented by the following composition formula,

$$Sr_1(Zn_{\frac{1}{3}}Nb_{\frac{2}{3}})_{1-x}Ti_xO_3$$

wherein Sr stands for strontium, Zn stands for zinc, Nb stands for niobium, Ti stands for titanium, O stands for oxygen, each suffix indicates the number of atoms, and x is a value larger than 0 but not larger than 0.5.

4,621,068

PROCESS FOR PREPARING POLYMER PARTICLES

Ove E. Hansen, Lille Varlose, Denmark, assignor to A/S Niro Atomizer, Soborg, Denmark

Filed May 16, 1985, Ser. No. 734,670
Claims priority, application Denmark, May 22, 1984, 2519/84
Int. Cl.[4] B01J *35/08*
U.S. Cl. 502—8 35 Claims

1. A process for preparing substantially spherical solid particles of a substantially uniform particle size, said method comprising:

(a) dispersing a solution of a polymerizable substance in a first liquid with which said solution is immiscible by means of a suitable emulsifier to form an emulsion having droplets of the solution of the polymerizable substance of a substantially uniform particle size as the dispersed phase,

(b) pouring the emulsion into a second liquid which is miscible with said solution but immiscible with said first liquid and which contains a sufficient amount of a reactant to polymerize the polymerizable substance to form said substantially spherical solid particles,

(c) separating a phase containing said first liquid from a phase containing said second liquid and said solid particles, and

(d) recovering said solid particles from said second liquid.

4,621,069

CONTINUOUS PROCESS FOR CATALYST REGENERATION BY STAGED BURNOFF OF CARBON AND SULFUR COMPOUNDS

Partha S. Ganguli, Mercer County, N.J., assignor to HRI, Inc., Gibbsboro, N.J.

Filed Oct. 3, 1983, Ser. No. 538,316
Int. Cl.[4] B01J *38/24, 38/26, 38/22, 23/84*
U.S. Cl. 502—45 14 Claims

1. A process for continuous regeneration of used catalyst containing carbon and sulfur deposits by using staged burnoff in multiple zones, said catalyst having been deactivated during hydrocarbon processing, said process comprising:

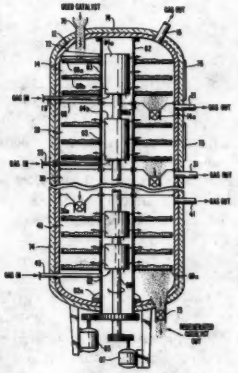
(a) introducing used particulate catalyst containing carbon and sulfur deposits into a first zone of a multiple zone regeneration vessel, and maintaining the catalyst in said zone at 300–500° F. temperature by contacting the catalyst with a heated inert gas for 1–2 hours residence time to evaporate lower boiling liquid components from the catalyst;

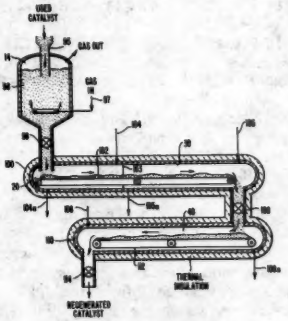
(b) passing the oil-free catalyst from said first zone to a second zone and maintaining the catalyst in said second zone at 780°–800° F. temperature by contacting the catalyst in thin beds with a heated gas flow containing 0.5–1.0 V % oxygen in an inert gas for 4–6 hours residence time to partially burnoff carbon and sulfur deposits from the catalyst;

(c) passing the partially regenerated catalyst from said second zone to a third zone and maintaining the catalyst in said third zone at 800°–850° F. temperature by contacting the catalyst in thin beds with a heated gas flow containing 1–2 V % oxygen in an inert gas for 4–6 hours residence time to further burnoff carbon and sulfur deposits from the catalyst;

(d) passing the further regenerated catalyst from said third zone to a fourth zone and maintaining the catalyst therein at 800°–850° F. temperature by further contacting the catalyst with a heated gas flow containing 2–6 V % oxygen in an inert gas for 6–10 hours residence time to complete burnoff of carbon and sulfur deposits from the catalyst; and

(e) withdrawing the regenerated catalyst from said fourth zone for further usage.





4. A catalyst regeneration process according to claim 1, wherein each oxygen-containing gas flow is passed radially outwardly across and through the multiple thin beds of catalyst to heat and regenerate the catalyst uniformly.

8. A catalyst regeneration process according to claim 1, wherein multiple zones are provided in a vertically oriented treatment vessel and each zone contains multiple trays of catalyst which are rotated while the catalyst bed depth on each tray is leveled to 0.5–2.0 inches for uniform burn-off of carbon and sulfur deposits by the hot gas.

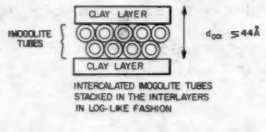
12. A catalyst regeneration process according to claim 1, wherein the multiple zones are provided within a horizontal treatment vessel and the catalyst is moved through said zones in succession by a moving belt conveyor for contacting the catalyst with the heated gas flows.

4,621,070

PILLARED INTERLAYERED CLAYS AND METHOD OF PREPARATION

Thomas J. Pinnavaia, Lansing, Mich., and Ivy D. Johnson, Mt. Laurel, N.J., assignors to Michigan State University, East Lansing, Mich.

Filed Dec. 2, 1985, Ser. No. 805,320
Int. Cl.[4] B01J *21/16, 20/16*
U.S. Cl. 502—63 17 Claims



1. A method of preparing a pillared, interlayered clay product in which a tubular structured aluminosilicate forms the pillars between the layers of the clay, comprising the steps of contacting an aqueous slurry of a clay selected from the group consisting of smectites, vermiculite, fluorohectorite, hydromicas, fluorotetrasilicic mica, fluorophlogopite, and related swelling 2:1 layered silicate clays with an aqueous solution of a tubular structured aluminosilicate and recovering the pillared interlayered clay product.

2. The method as set forth in claim 1 in which the tubular structured aluminosilicate is imogolite.

8. A pillared clay selected from the group consisting of smectites, vermiculite, fluorohectorite, hydromicas, fluorotetrasilicic mica, fluorophlogopite, and related swelling 2:1 layered silicate clays, intercalated with a tubular structured aluminosilicate.

4,621,071

COMPOSITE CATALYST FOR TREATMENT OF VEHICULAR EXHAUST GASES AND PROCESS FOR THE PREPARATION OF THE CATALYST

Gilbert Blanchard, Le Plessis Belleville, and Michel Prigent, Rueil Malmaison, both of France, assignors to Pro-Catalyse, Rueil-Maimaison, France

Filed Dec. 7, 1984, Ser. No. 679,449
Claims priority, application France, Dec. 9, 1983, 83 19728
Int. Cl.[4] B01J *21/04, 23/10, 23/64, 23/89*
U.S. Cl. 502—302 19 Claims

1. A process for the preparation of a composite active phase/support catalyst adapted for the treatment of internal combustion engine exhaust gases, the active phase of which comprises at least one metal from a first group comprising platinum, palladium, iridium, rhodium, ruthenium, rhenium, silver and gold and at least one metal from an additional group comprises cobalt, zinc, manganese, nickel, tungsten, yttrium, a lanthanide, iron, copper, chromium, ziroconium, molybdenum, tin, calcium, strontium and barium and the support therefor comprising binder/filler admixture, which process comprises (i) forming a first intimate admixture of the binder material and said at least one metal from the first group, or precursor thereof, and/or said at least one metal from the additional group wherein the first admixture contains at least 50% by weight of the total in the composite catalyst of said at least one metal from the first group and/or at least 50% by weight of the total in the composite catalyst of said at least one metal from the additional group, (ii) combining the first admixture with filler to form a second intimate admixture, (iii) forming the second admixture into a catalyst shaped article, (iv) optionally calcining said catalyst shaped article, (v) in an aqueous medium incorporating the remainder of said at least one metal from the first group, or precursor thereof, and/or said at least one metal from the additional group into said catalyst shaped article, and thence (vi) drying and activating the composite catalyst.

4,621,072

PROCESS FOR PREPARING ABRASION-RESISTANT COATED CATALYSTS

Dietrich Arntz; Günter Prescher, both of Hanau; Werner Burkhardt, Brachttal; Johannes Heilos, Seligenstadt, and Reinhard Manner, Maintal, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 390,446, Jun. 21, 1982, abandoned.
This application Feb. 26, 1985, Ser. No. 710,078
Claims priority, application Fed. Rep. of Germany, Jun. 26, 1981, 3126062
Int. Cl.[4] B01J *27/224, 27/19, 27/192, 23/00*
U.S. Cl. 502—504 25 Claims

1. A process for preparing abrasion-resistant coated particulate catalysts formed of an inert particulate support which has a rough surface and a particle size range of 0.5 to 6 mm and a coating of catalytically active material enclosing said inert support and anchored to said support, said process comprising

providing a bed of said support located in a cylindrically or conically shaped horizontal zone having a horizontal axis of rotation, agitating said bed and spraying onto said bed a suspension of a pulverulent precursor for the catalytically active material in a suspending medium, while partially removing the suspending medium by a gas stream at a temperature of 20°-250° C., to thereby deposit a coating of the said pulverulent precursor on said support while maintaining essentially constant residual moisture of the coating during the build up of the coating on the inert support,

said agitating being accomplished by imparting a mixing motion to the support bed located in said horizontal zone by mechanical action of rotation of said axis of rotation,

simultaneously loosening and thereby agitating the support bed by blowing in from below a fluidizing, mixingintensifying gas stream; and at the same time passing a suspension of the precursor for the catalytically active material, which suspension contains a binder, countercurrent to the gas in this bed at a rate which increases with increasing thickness of the coating,

the amounts of suspending medium being removed by said gas and the amount of suspending medium being passed countercurrent to the gas being maintained in a substantially constant ratio which is determined by the particular combination of support and precursor used,

the thermal expansion coefficients of support and of dried pulverulent precursor being so chosen that they differ by at most 15%,

and after completing the passing of the suspension in countercurrent flow with the gas, increasing the density of the coating being formed on said particulate support by continuing the increased mixing motion,

thereafter stopping the mechanical mixing motion upon reaching the desired density and drying the coated support in ancontinuing gas stream

wherein the spraying of the said suspension and the drying of the coated support are carried out in said cylindrically or conically shaped horizontal zone having said axis of rotation, the said fluidizing, mixing-intensifying gas stream being introduced exclusively from beneath said support bed through means for introducing said gas stream arranged on the outside in an outer jacket of said horizontal zone, and through perforated hollow ribs arranged on the inside of said horizontal zone, the perforations on the hollow ribs being oriented away from the direction of rotation of said axis of rotation,

and finally heat-treating the coated support.

4,621,073
CYCLIC PEPTIDES HAVING SOMATOSTATIN ACTIVITY

Axel Friedrich, Frankfurt am Main; Wolfgang König; Volker Teetz, both of Hofheim am Taunus; Rolf Geiger, Frankfurt am Main, and Jürgen K. Sandow, Königstein, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

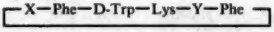
Filed Jan. 31, 1984, Ser. No. 575,703

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1983, 3303345

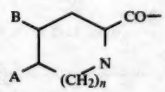
Int. Cl.[4] A61K *37/24;* **C07K** *7/26*

U.S. Cl. 514—11 **19 Claims**

1. A cyclic hexapeptide of the formula III



in which X represents the radical of an L-aminoacid of the formula IIIa



(IIIa)

in which

A and B are identical or different and denote alkyl having 1 to 3 carbon atoms, or A and B together represent a saturated, unsaturated or aromatic monocyclic or bicyclic structure having 3 to 6 carbon atoms,

n denotes 0 or 1, and

Y represents an aliphatic or aromatic L-aminoacid the sidechain of which can be hydroxylated, said amino acid being selected from the group consisting of L-alanine, L-serine, L-threonine, L-valine, L-leucine, L-isoleucine, L-phenylalanine, and L-tyrosine, and salts thereof with physiologically tolerated acids.

4,621,074
METHOD OF TREATING SMOKING WITHDRAWAL SYNDROME

Stephen J. Bourne, 109 Grange Crescent, Chigwell, Essex, England

Filed Oct. 28, 1985, Ser. No. 792,264

Int. Cl.[4] A61K *37/00*

U.S. Cl. 514—12 **7 Claims**

1. A method of reducing or eliminating the symptoms of smoking withdrawal syndrome in tobacco smokers, which method comprises the administration in an effective amount of at least one dose of a corticotrophin or a corticotrophin analog.

4,621,075
GEL-FORM TOPICAL ANTIBIOTIC COMPOSITIONS

Mahdi B. Fawzi, Flander, N.J., and Gary L. Manring, Oxford, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 28, 1984, Ser. No. 676,027

Int. Cl.[4] A61K *31/70*

U.S. Cl. 514—32 **6 Claims**

1. A gel-form pharmaceutical composition for topical application comprising:

(a) from about 0.25% to about 5% of clindamycin phosphate;

(b) zinc acetate, wherein the molar ratio of (a):(b) is from about 1:1.2 to about 1:2; and

(c) from about 85% to about 99.5% of a non-aqueous pharmaceutically-acceptable topical vehicle which consists essentially of (1) a component selected from the group consisting of methanol, ethanol, n-propanol, butanol and mixtures thereof, together with (2) diisopropyl sebacate.

4,621,076
PHARMACEUTICAL COMPOSITION USEFUL FOR INHIBITING PLATELET AGGREGATION

Fumio Kuzuya; Kyoji Kito, both of Nagoya, and Hisaaki Uchida, Kounan, all of Japan, assignors to Meito Sangyo Kabushiki Kaisha, Aichi, Japan

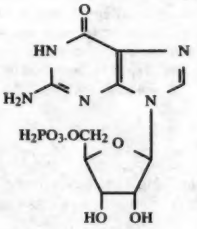
Continuation of Ser. No. 543,942, Oct. 19, 1983, abandoned. This application Feb. 15, 1985, Ser. No. 702,424

Claims priority, application Japan, Oct. 21, 1982, 57-183676

Int. Cl.[4] A61K *31/70*

U.S. Cl. 514—48 **2 Claims**

1. A method for inhibiting blood platelet aggregation which comprises orally adminstering to a human patient, suffering from cerebral ischemia or transient ischemic attack by thrombosis or embolism in cerebral vessels, a platelet aggregation inhibiting amount of guanosine 5'-monophosphate represented by the formula



or a pharmaceutically acceptable salt thereof.

4,621,077
PHARMACOLOGICALLY ACTIVE BIPHOSPHONATES, PROCESS FOR THE PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITIONS THEREFROM

Sergio Rosini, and Giorgio Staibano, both of Pisa, Italy, assignors to Istituto Gentili S.p.A., Pisa, Italy

Continuation-in-part of Ser. No. 480,264, Mar. 30, 1983. This application Jun. 8, 1984, Ser. No. 618,578

Claims priority, application Italy, Apr. 15, 1982, 20781 A/82

Int. Cl.[4] A61K *31/66*

U.S. Cl. 514—108 **1 Claim**

1. A method of treatment of urolithiasis and inhibiting bone reabsorption which consists of administering to a patient in need thereof an effective amount of 4-amino-1-hydroxybutane-1,1-biphosphonic acid.

4,621,078
PESTICIDAL VINYL PHOSPHORIC ESTERS

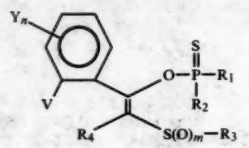
David M. Roush, Princeton, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Mar. 7, 1985, Ser. No. 709,483

Int. Cl.[4] A01N *57/02;* **C07F** *9/16*

U.S. Cl. 514—127 **27 Claims**

1. The method of controlling insects or acarides which comprises applying to the locus where control is desired an insecticidally or acaricidally effective amount of at least one vinyl phosphoric ester of the formula



wherein

R_1 is lower alkoxy;

R_2 is selected from lower alkoxy and lower thioalkyl;

R_3 is selected from lower alkyl, phenyl, and halophenyl;

R_4 is selected from hydrogen, halogen, and lower thioalkyl;

V is selected from halogen, lower alkyl, lower haloalkyl, lower alkoxy carbonyl, and lower alkyl sulfonyl;

Y is halogen;

m is 0–2, provided m is not 0 when V is lower alkyl; and

n is 0–2.

4,621,079

MULTISTAGE COMBINATION PREPARATION AND ITS USE FOR ORAL CONTRACEPTION

Ursula Lachnit-Fixson, and Renate Unger, both of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Dec. 21, 1984, Ser. No. 685,016

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1983, 3347125

Int. Cl.[4] A61K *31/56*

U.S. Cl. 514—170 **20 Claims**

1. A multiphase combination composition suitable for oral contraception comprising 21 separate dosage units suitable for daily administration of one dosage unit per day consisting essentially of

as a first phase 4–6 units comprising, in admixture with a pharmaceutically acceptable carrier, ethinylestradiol as estrogen in a low contraceptively effective dose of up to 0.05 mg and gestodene as gestagen in a low contraceptively effective dose of up to 0.07 mg;

as a second phase, 4–6 units comprising, in admixture with a pharmaceutically acceptable carrier, ethinylestradiol in the same dose or a higher dose than that of the first phase, up to twice the first-phase dose, and gestodene in the same or a higher dose than that of the first phase up to one and one-half that of the first-phase and,

as a third phase, 9–11 units comprising, in admixture with a pharmaceutically acceptable carrier, ethinylestradiol in the same dose or a lower dose than the second phase, as low as that of the first phase, and gestodene in a dose higher than that of the second phase, up to three times that of the first phase.

12. A method of contraception which comprises administering for 21 successive days to a female of child-bearing age, a combination of an estrogen and a gestagen, in the form of 21 separate dosage units, one per day,

as a first phase 4–6 units comprising, in admixture with a pharmaceutically acceptable carrier, ethinylestradiol as estrogen in a low contraceptively effective dose of up to 0.05 mg and gestodene as gestagen in a low contraceptively effective dose of up to 0.07 mg;

as a second phase, 4–6 units comprising, in admixture with a pharmaceutically acceptable carrier, ethinylestradiol in the same dose or a higher dose than that of the first phase, up to twice the first-phase dose, and gestodene in the same or a higher dose than that of the first phase up to one and one-half that of the first-phase and,

as a third phase, 9–11 units comprising, in admixture with a pharmaceutically acceptable carrier, ethinylestradiol in the same dose or a lower dose than the second phase, as low as that of the first phase, and gestodene in a dose higher than that of the second phase, up to three times that of the first phase,

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4,621,080

SYNERGISTIC FUNGICIDAL COMPOSITIONS

Zsolt Dombay; Erzsébet Grega née Tóth; József Nagy, all of Miskolc; Csaba Pavliscsak, Sajóbábony; László Tasi; András Tóth, both of Miskolc; Oszkár Tóth, Debrecen; Judit Vitányi, Miskolc; Ferenc Bihari, Budapest; Péter Bohus, Budapest; Péter Inczédy, Budapest; István Magyari, Gödöllo; Marianna Kertész née Szabó, Budapest; László Wohl, Budapest, and Attila Ferenczi, Budapest, all of Hungary, assignors to Eszakmagyarorszagi Vegyimuvek, Gyartelep and Budapesti Vegyimuvek, Budapest, both of, Hungary

Filed Jun. 29, 1984, Ser. No. 625,945

Claims priority, application Hungary, Jun. 30, 1983, 2366/83

Int. Cl.[4] A01N *55/02, 43/52*

U.S. Cl. 514—187 **9 Claims**

1. A synergistic fungicidal composition for the treatment of Fusarium spp., Aspergillus, Penicillium, or *Tilletia foetida*, which comprises:

(a) benzimidazole-2-yl-methyl carbamate;

(b) zinc 8-oxyquinolinate-dimethyl-dithiocarbamate complex; and

(c) manganese 8-oxyquinolinate-dimethyl-dithiocarbamate complex;

wherein the weight ratio of the benzimidazole-2-yl-methyl carbamate to the combined zinc and manganese 8-oxyquinolinate-dimethyl-dithiocarbamate complexes is 1:3 to 2:1 and the weight ratio between the zinc 8-oxyquinolinate-dimethyl-dithiocarbamate complex and the manganese 8-oxyquinolinate-dimethyl-dithiocarbamate complex is 1:1, as active ingredients.

4,621,081

CEPHALOSPORIN ANTIBIOTICS

Cynthia H. O'Callaghan, Gerrards Cross; Barry E. Ayres, Ickenham; David G. H. Livermore; Christopher E. Newall, both of London, and Niall G. Weir, Wembley, all of England, assignors to Glaxo Group Limited, London, England

Continuation of Ser. No. 285,573, Jul. 21, 1981, abandoned, which is a continuation of Ser. No. 176,535, Aug. 8, 1980, abandoned, which is a continuation of Ser. No. 112,205, Jan. 15, 1980, abandoned, which is a division of Ser. No. 42,595, May 25, 1979, abandoned. This application Sep. 27, 1982, Ser. No. 423,555

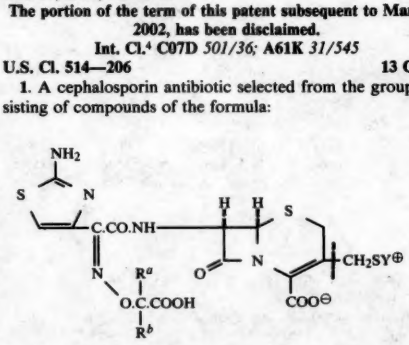
Claims priority, application United Kingdom, May 26, 1978, 23041/78; May 26, 1978, 23042/78; Oct. 27, 1978, 42166/78; Oct. 27, 1978, 42196/78

The portion of the term of this patent subsequent to Mar. 12, 2002, has been disclaimed.

Int. Cl.[4] C07D *501/36;* **A61K** *31/545*

U.S. Cl. 514—206 **13 Claims**

1. A cephalosporin antibiotic selected from the group consisting of compounds of the formula:



(I)

wherein R^a and R^b, which may be the same or different, each represent a C_{1-4} alkyl group or R^a and R^b together with the carbon atom to which they are attached form a C_{3-7} cycloalkylidene group and $Y^{\oplus}$ represents a C-linked pyridinium ring

wherein the quaternary nitrogen is substituted by a C_{1-4} alkyl group and non-toxic salts thereof.

4,621,082

PYRIDOPYRIMIDINES, PHARMACEUTICAL COMPOSITIONS AND USE

Horst Meyer; Egbert Wehinger, both of Wuppertal; Bernward Garthoff, Hilden, and Stanislav Kazda, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

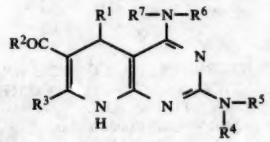
Filed Jan. 7, 1986, Ser. No. 816,594

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1985, 3501696

Int. Cl.[4] A61K *31/505, 31/535;* C07D *471/04*

U.S. Cl. 514—212 12 Claims

1. A pyridopyrimidine of the formula



in which

R^1 represents carbocyclic aryl or a heterocyclic radical from the group consisting of thienyl, furyl, pyrryl, pyrazolyl, imidazolyl, oxazolyl, isoxazolyl, thiazolyl, pyridyl, pyridazinyl, pyrimidyl, pyrazinyl, indolyl, benzimidazolyl, benzoxazolyl, benzisoxazolyl, benzoxadiazolyl, benzthiadiazolyl, quinolyl, isoquinolyl, quinazolyl and quinoxalyl, the aryl radical and the heterocyclic radicals optionally containing 1 to 5 identical or different substituents from the group consisting of phenyl, alkyl, alkoxy, alkylene, dioxyalkylene, halogen, polyfluoroalkyl, polyfluoroalkoxy, alkylamino, nitro, cyano, azido, alkoxycarbonyl, carbamoyl, sulphamoyl, SO_m-alkyl (m=0 to 2) and SO_m-aralkyl (m=0 to 2),

R^2 represents a straight-chain, branched or cyclic alkyl radical or an aryl or aralkyl group, or denotes an amino, monoalkylamino or dialkylamino group, it being possible for the alkyl groups to be optionally substituted by a phenyl radical, or represents an anilino radical optionally substituted by alkyl, alkoxy or halogen, or represents the radical OR^8, in which R^8 represents a straight-chain, branched or cyclic, saturated or unsaturated hydrocarbon radical which is optionally interrupted by an oxygen or sulphur atom in the chain and/or is optionally substituted by halogen, cyano, hydroxyl, acyloxy, nitro, nitrooxy, alkoxycarbonyl, phenyl, phenoxy, phenylthio, phenylsulphonyl, pyridyl or an amino group, this amino group being optionally substituted by two identical or different substituents from the group consisting of alkyl, alkoxyalkyl, aryl and aralkyl, or the amino group optionally being substituted in such a way that 2 substituents, together with the nitrogen atom, form a 5-membered to 7-membered ring which can contain oxygen or sulphur as a further hetero-atom or an N-alkyl/phenyl grouping,

R^3 represents hydrogen, a straight-chain, branched or cyclic hydrocarbon radical optionally substituted by 1 or 2 alkoxy or acyloxy groups, or an aryl or aralkyl radical, and

R^4, R^5, R^6 and R^7, which can be identical or different, represent hydrogen or a straight-chain or branched alkyl radical optionally substituted by hydroxyl, alkoxy, or acyloxy, it being possible for the radicals R^4 and R^5 and/or R^6 and R^7, together with the respective nitrogen atom, to form a 5-membered to 7-membered ring which optionally contains oxygen or sulphur as a further hetero-atom or an N-alkyl or N-aryl grouping, or represents an aryl or aralkyl radical.

9. A circulation active composition comprising a circulation active effective amount of a compound according to claim 1 in admixture with a pharmaceutically acceptable diluent.

4,621,083

PAF-ANTAGONISTIC DIAZEPINES

Jorge Casals-Stenzel, Mainz; Karl-Heinz Weber, Gau-Algesheim; Gerhard Walther, Bingen am Rhein; Albrecht Harreus, and Gojko Muacevic, both of Ingelheim am Rhein, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim KG, Ingelheim am Rhein, Fed. Rep. of Germany

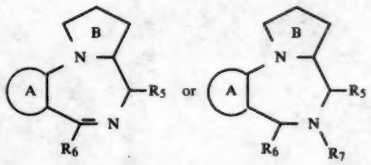
Filed Oct. 1, 1985, Ser. No. 782,632

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1984, 3435973

Int. Cl.[4] A61K *31/65*

U.S. Cl. 514—220 12 Claims

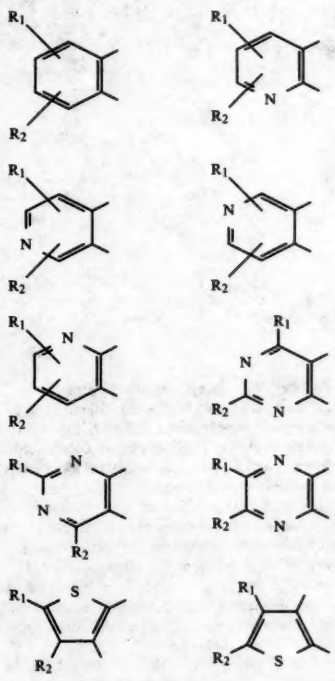
1. A method of treating an individual having a disorder responsive to PAF-antagonist activity, which method comprises treating said individual with a therapeutically effective amount of a compound of formulae



(I) (II)

wherein

A is an anellated ring of formula:



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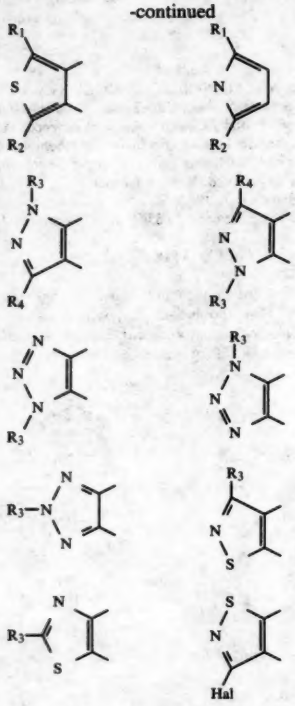
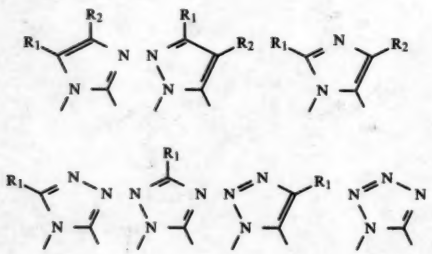


B is an anellated ring of formula



R_1 and R_2 are each independently hydrogen, a C_1–C_8 straight-chained or branched alkyl, alkenyl or alkynyl optionally mono- or polysubstituted by halogen, hydroxy, hydroxycarbonyl, alkoxy, alkylmercapto, alkylsulphonyl, alkylsulphinyl, amino, alkylamino, dialkylamino, alkylcarbonyl, alkyloxycarbonyl or an acid amide group; cycloalkyl; a saturated carbocyclic or heterocyclic ring condensed on, which may contain oxygen, sulphur or nitrogen as a heteroatom while the nitrogen-containing ring may carry an alkyl group at the nitrogen atom; halogen, trifluoromethyl, nitro, cyano, optionally substituted amino, alkylmercapto, alkylcarbonyl, alkoxy, alkyloxycarbonyl, hydroxycarbonyl, or an acid amide group;

R_3 and R_4, are each independently hydrogen, a C_1–C_8 straight-chained or branched alkyl, alkenyl or alkynyl optionally mono- or polysubstituted by halogen, hydroxy, alkoxy, alkylmercapto, amino, alkylamino, dialkylamino, alkylcarbonyl, alkyloxycarbonyl or an acid amide group;

R_5 and R_7 are each independently hydrogen, a C_1–C_8 straight-chained or branched alkyl, alkenyl or alkynyl optionally mono- or polysubstituted by halogen, hydroxy, alkoxy, alkylmercapto, amino, alkylamino, dialkylamino, alkylcarbonyl, alkyloxycarbonyl or an acid amide group, or R_5 may be a hydroxy or an alkylcarbonyloxy group;

R_6 is phenyl, which can optionally be substituted, preferably in the 2 position, by methyl, methoxy, halogen, nitro or trifluoromethyl, or R_6 can be thienyl or α-pyridyl; and non-toxic, pharmaceutically acceptable acid addition salts thereof.

4,621,084

IMIDAZO-HETEROCYCLIC COMPOUNDS AND PHARMACEUTICAL COMPOSITION COMPRISING THE SAME

Takao Takaya, Kawanishi, and Hisashi Takasugi, Osaka, both of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

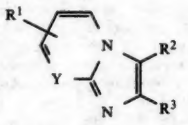
Filed Feb. 27, 1984, Ser. No. 583,609

Claims priority, application United Kingdom, Feb. 25, 1983, 8305245

Int. Cl.[4] **A61K** *31/41*; **C07D** *471/02, 491/02*

U.S. Cl. 514—225 **11 Claims**

1. A compound of the formula:



wherein

R^1 is hydrogen, lower alkyl or halogen,

R^2 is hydrogen, lower alkyl, halogen, aminomethyl, aminomethyl substituted with lower alkyl, piperazin-1-ylmethyl, or piperazin-1-yl-methyl substituted with lower alkyl,

R^3 is a partially saturated heterocyclic group selected from the group consisting of benzothiazolinyl, benzoxazolinyl, benzimidazolinyl, 3,4-dihydro-2H-1, 4-benzothiazinyl, 3,4-dihydro-2H-1, 4-benzoxazinyl and 1,2,3,4-tetrahydroquinoxyalinyl, which is substituted by oxo, thioxo, imino or lower alkylimino, and which may be further substituted with lower alkyl or lower alkyl substituted with lower alkanoyloxy, lower alkoxycarbonyl, pyridyl or lower alkylamino; or an unsaturated heterocyclic group selected from the group consisting of benzoxazolyl and benzimidiazolyl, which may be substituted with lower alkyl or pyridyl (lower) alkylthio, and

Y is N or a group of the formula:

in which R^4 is hydrogen, hydroxy, lower alkyl, lower alkoxy or ar(lower)alkoxy, and pharmaceutically acceptable salts thereof.

11. A method for antiulcerative treatment which comprises administering to an animal or human in need thereof an antiulceratively effective therapeutic dose of a compound of claim **1**.

4,621,085

2,4,7-TRIAMINO-6-PHENYLPTERIDINE

Ulrich Borchard, Grevenbroich; Ernst Mutschler, Mainz-Hechtsheim; Werner Moehrke, Seeheim-Jugenheim; Karl-Dieter Voelger, Bickenbach, and Erwin Wolf, Darmstadt, all of Fed. Rep. of Germany, assignors to Rohm GmbH Chemische Fabrik, Darmstadt, Fed. Rep. of Germany

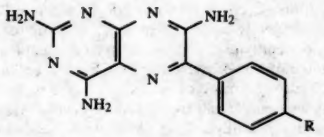
Filed Apr. 3, 1985, Ser. No. 719,570

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1984, 3412765

Int. Cl.[4] A61K *31/50, 31/495*

U.S. Cl. 514—249 6 Claims

1. A pharmaceutical composition comprising an anti-arryhythmic effective amount of a compound of the formula:



wherein R is a radical selected from the group consisting of, sec-butyl, tert-butyl, neopentyl, cyclohexyl, and benzyl, said composition having anti-arrhythmic cardiac activity.

4,621,086

METHOD OF TREATING LEUKEMIA WITH PYRAZOLO[3,4,5-kl]ACRIDINES

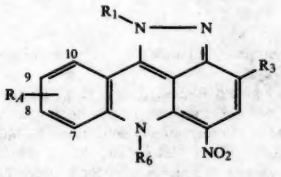
David B. Capps, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 768,310, Aug. 22, 1985, Pat. No. 4,558,730, which is a division of Ser. No. 619,258, Jun. 15, 1984, Pat. No. 4,555,572, which is a continuation-in-part of Ser. No. 515,125, Jul. 19, 1983, abandoned. This application Jan. 22, 1986, Ser. No. 821,318

Int. Cl.[4] A61K *31/41;* C07D *471/02*

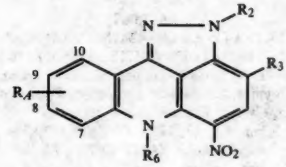
U.S. Cl. 514—287 2 Claims

1. A method for treating leukemia in a mammal which comprises administering a sufficient amount of a compound having the formula:



and the pharmaceutically acceptable salts thereof, where R_1 is -alkylene-NR_xR_y where alkylene is two to four carbon straight or branched chain alkylene which can be substituted by hydroxyl, and R_x and R_y are each independently H, one to four carbon straight or branched chain alkyl, or two to four carbon straight or branched chain hydroxyalkyl, or combined with said nitrogen represent piperidyl or pyrrolidyl, when R_x and R_y are both alkyl, the amine may be an N-oxide; R_3 is H or NO_2; R_6 is H or one to three carbon straight or branched chain alkyl; R_A is H or one or two groups selected from hydroxy, chloro, amino, one to four carbon straight or branched alkylamino or dialkylamino optionally substituted by methoxy, dimethylaminoethoxy dimethylaminopropoxy, diethylaminoethoxy, diethylaminopropoxy, benzyloxy or benzyloxy substituted by methoxy, three to ten carbon straight or branched trialkylsilyoxy, two to twelve carbon straight or branched alkanoyloxy which may be substituted by methoxy, benzoyloxy or benzoyloxy substituted by methoxy, one to four carbon straight or branched alkoxycarbonyloxy, benzyloxycarbonyloxy, one to four carbon straight or branched alkylaminocarbonyloxy, benzyloxycarbonyloxy, one to four carbon straight or branched alkylaminocarbonyloxy or dialkylaminocarbonyloxy in combination with a pharmaceutically acceptable carrier, to a mammal in need thereof.

2. A method for treating leukemia a mammal which comprises administering a sufficient amount of a compound having the formula



and the pharmaceutically acceptable salts thereof, where R_2 is -alkylene-NR_xR_y where alkylene is two to four carbon straight or branched chain alkylene which can be substituted by hydroxyl, and R_x and R_y are each independently H, one to four carbon straight or branched chain alkyl, or two to four carbon straight or branched chain hydroxyalkyl or combined with said nitrogen represent piperidyl or pyrrolidyl, when R_x and R_y are both alkyl, the amine may be an N-oxide; R_3 is H or NO_2; R_6 is H or one to three carbon straight or branched chain alkyl; R_A is H or one or two groups selected from hydroxy, chloro, amino, one to four carbon straight or branched alkylamino or dialkylamino optionally substituted by methoxy, dimethylaminoethoxy, dimethylaminopropoxy, diethylaminoethoxy, diethylaminopropoxy, benzyloxy or benzyloxy substituted by methoxy, three to ten carbon straight or branched trialkysilyoxy, two to twelve carbon straight or branched alkyanoyloxy which may be substituted by methoxy, benzoyloxy or benzoyloxy substituted by methoxy. one to four carbon straight or branched alkoxycarbonyloxy, benzyloxycarbonyloxy, one to four carbon straight or branched alkylaminocarbonyloxy or dialkylaminocarbonyloxy in combination with a pharmaceutically acceptable carrier, to a mammal in need thereof.

4,621,087

ANTI-ANOXIC FURO- OR PYRROLO-PYRIDINE COMPOUNDS AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Alexander Wick, Saint Nom-La Bretèche; Jonathan Frost, Wissous, and Patrick Lardenois, Bourg-la-Reine, all of France, assignors to Synthelabo, Paris, France

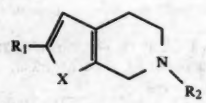
Filed Jun. 26, 1985, Ser. No. 748,765

Claims priority, application France, Jun. 27, 1984, 84 10108

Int. Cl.[4] A61K *31/44;* C07D *491/048, 471/04*

U.S. Cl. 514—300 9 Claims

1. A pyridine derivative of the formula (I)



(I)

in which X is —O— or —NH—, R_1 is a phenyl group optionally substituted by one or two halogen atoms or by a methyl, ethyl, trifluoromethyl, methoxy or phenyl group or, when R_2 is not a benzyl group, an amino group, or is a naphthyl or benzodioxanyl group, and R_2 is a hydrogen or a benzyl group, or when X is —O—, R_2 can also be a methyl or ethyl group, and a pharmaceutically acceptable acid addition salt thereof.

4. A composition for treating anoxia comprising a pyridine derivative of the formula (I) or a pharmaceutically acceptable

salt thereof as claimed in claim 1 in an amount effective in treating anoxia, and a pharmaceutically acceptable excipient.

4,621,088

N-ACYL DERIVATIVES OF AMINO ACIDS AND THEIR ESTERS, AND DRUGS IN WHICH THEY ARE PRESENT

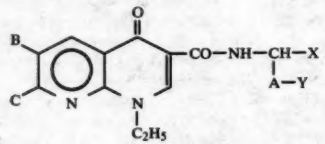
Claude Laruelle, Villeneuve-Loubet; Marcel Lepant, Nice, and Bernard Raynier, Cagnes sur Mer, all of France, assignors to Panmedica, Carros, France

Filed May 23, 1985, Ser. No. 737,131

Int. Cl.[4] A61K *31/33*; C07D *471/04*

U.S. Cl. 514—300 **12 Claims**

1. 1-Ethylpyridin-4-one-3-carboxylic derivatives of amino acids and pharmaceutically acceptable salts thereof, corresponding to formula I below:



in which A represents: a linear or branched, saturated hydrocarbon radical containing from 1 to 6 carbon atoms or cyclohexyl, X represents: a —COOH radical, a —COOAlkyl radical (alkyl from C_1 to C_4), a hydrogen atom or a $—CH_3$ group when Y is —COOH or —COOAlkyl, Y represents: a —COOH radical, a —COOAlkyl radical (alkyl from C_1 to C_4), an $—NH_2$ group, an —SH group, an $—SCH_3$ group, a —N-H—CH(=NH)—NH_2 group, a mono- or di-OH substituted or unsubstituted phenyl group, an indolin-3-yl group or a 5-hydroxyindolin-3-yl group, B represents: a $—CH_3$ radical, a CF_3 radical, an OCH_3 radical, a hydrogen atom or a halogen atom, and C represents: an $—OCH_3$ group, an ethoxy radical, an alkyl group from C_1 to C_4, a hydrogen atom, a diethyl or dimethyl aminoethylamino group, or a diethyl or dimethylamino radical.

4,621,089

PYRAZOLOPYRIDINE DERIVATIVES AND THEIR USE IN TREATING INFLAMMATION AND ALLERGIC CONDITIONS

Robert W. Ward, Old Harlow, and Ian Hughes, Sawbridgeworth, both of England, assignors to Beecham Group p.l.c., Brentford, England

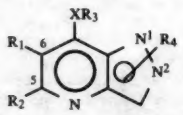
Filed Feb. 22, 1985, Ser. No. 704,621

Claims priority, application United Kingdom, Feb. 22, 1984, 8404586

Int. Cl.[4] A61K *31/44*; C07D *471/04*

U.S. Cl. 514—303 **9 Claims**

1. A compound of formula (I) or a pharmaceutically acceptable salt thereof:



(I)

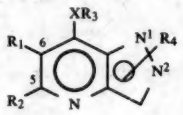
wherein:

X is sulphur SO or NR wherein R is hydrogen of C_{1-6} alkyl, SO_2;

R_1 is COR_5 wherein R_5 is hydroxy, C_{1-6} alkoxy, C_{2-6} alkenyloxy, phenoxy or benzyloxy wherein the phenyl and benzyl moieties are optionally substituted by one or two of halogen, CF_3, C_{1-4} alkoxy and C_{1-4} alkyl; or R_5 is $NR_{13}R_{14}$ wherein R_{13} and R_{14} are independently hydrogen, C_{2-6} alkyl, C_{2-6} alkenyl, benzyl or phenyl wherein the phenyl and benzyl moieties are optionally substituted by one or two of halogen, CF_3, C_{1-4} alkoxy and C_{1-4} alkyl; or CF_3; and R_2 is hydrogen, C_{1-6} alkyl or phenyl optionally substituted by halogen, CF_3, C_{1-4} alkoxy or C_{1-4} alkyl; or R_2 is COR_5 as defined above or CF_3 and R_1 is hydrogen;

R_3 is C_{1-10} alkyl, optionally substituted by hydroxy, C_{1-4} alkoxy, thiol, C_{1-4} alkylthio or NR_6R_7 wherein R_6 and R_7 are independently hydrogen or C_{1-6} alkyl or together are C_{3-6} polymethylene; C_{2-10} alkenyl or phenyl optionally substituted by one or two halogen, CF_3, C_{1-4} alkoxy, C_{1-4} alkyl, hydroxy, nitro, cyano, C_{2-10} carboxylic acyloxy, NR_8R_9 wherein R_8 and R_9 are independently selected from hydrogen, C_{1-6} alkyl, C_{2-7} alkanoyl or C_{1-6} alkylsulphonyl or COR_{10} wherein R_{10} is hydroxy, C_{1-6} alkoxy or $NR_{11}R_{12}$ wherein R_{11} and R_{12} are independently selected from hydrogen or C_{1-6} alkyl; and R_4 is hydrogen; or C_{1-4} alkyl or benzyl attached at nitrogen atom 1 or 2.

9. A method of treatment of inflammatory or allergic conditions in mammals comprising the adminstration of an effective amount of a compound of formula I:



(I)

wherein:

X is oxygen, sulphur, SO or SO_2 or NR wherein R is hydrogen or C_{1-6} alkyl;

R_1 is COR_5 wherein R_5 is hydroxy, C_{1-6} alkoxy, C_{2-6} alkenyloxy, phenoxy or benzyloxy wherein the phenyl and benzyl moieties are optionally substituted by one or two of halogen, CF_3, C_{1-4} alkoxy and C_{1-4} alkyl; or R_5 is $NR_{13}R_{14}$ wherein R_{13} and R_{14} are independently hydrogen, C_{2-6} alkyl, C_{2-6} alkenyl, benzyl or phenyl wherein the phenyl and benzyl moieties are optionally substituted by one or two of halogen, CF_3, C_{1-4} alkoxy and C_{1-4} alkyl; or CF_3; and R_2 is hydrogen, C_{1-6} alkyl or phenyl optionally substituted by halogen, CF_3, C_{1-4} alkoxy or C_{1-4} alkyl; or R_2 is COR_5 as defined above or CF_3 and R_1 is hydrogen;

R_3 is C_{1-10} alkyl, optionally substituted by hydroxy, C_{1-4} alkoxy, thiol, C_{1-4} alkylthio or NR_6R_7 wherein R_6 and R_7 are independently hydrogen or C_{1-6} alkyl or together are C_{3-6} polymethylene; C_{2-10} alkenyl or phenyl optionally substituted by one or two halogen, CF_3, C_{1-4} alkoxy, C_{1-4} alkyl, hydroxy, nitro, cyano, C_{2-10} carboxylic acyloxy, NR_8R_9 wherein R_8 and R_9 are independently selected from hydrogen, C_{1-6} alkyl, C_{2-7} alkanoyl or C_{1-6} alkylsulphonyl or COR_{10} wherein R_{10} is hydroxy, C_{1-6} alkoxy or $NR_{11}R_{12}$ wherein R_{11} and R_{12} are independently selected from hydrogen or C_{1-6} alkyl; and R_4 is hydrogen; or C_{1-4} alkyl or benzyl attached at nitrogen atom 1 or 2;

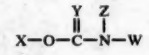
or a pharmaceutically acceptable salt thereof to the sufferer.

4,621,090
ANTIFUNGAL COMPOSITIONS

Kazuo Iwata, Tokyo; Tetsuo Takematsu, Tochigi; Yuji Nonaka, Yamaguchi; Akira Nakanishi, Yamaguchi; Hideo Morinaka, Yamaguchi; Kenji Tsuzuki, Yamaguchi; Mitsuyuki Murakami, Yamaguchi, and Takeshi Uotani, Yamaguchi, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shinnanyo, Japan

Continuation-in-part of Ser. No. 648,126, Sep. 7, 1984, abandoned. This application Sep. 13, 1984, Ser. No. 650,053
Claims priority, application Japan, Sep. 13, 1983, 58-167415
Int. Cl.[4] A61K *31/44*
U.S. Cl. 514—332 **11 Claims**

1. A method for controlling fungus, comprising administering an effective amount of a compound of formula (I)



(I)

wherein

X is 2-naphthyl, 5-indanyl, 5,6,7,8-tetrahydro-2-naphthyl, 1,4-methano-1,2,3,4-tetrahydro-6-naphthyl, 1,4-ethano-1,2,3,4-tetrahydro-6-naphthyl, 2-quinolyl, or a phenyl group having one or two of the same or different substituent selected from the group consisting of halogen atoms, lower alkyls, lower alkenyls, lower alkoxys, lower alkenyloxys, halogenated lower alkyls, lower alkylthios, lower alkylsulfonyls, lower alkylaminos, nitro and methylenedioxys;

Y is an oxygen atom or a sulfur atom;

Z is a lower alkyl group; and

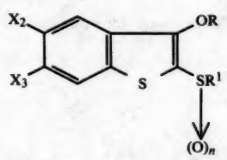
W is a pyridyl group having one or two of the same substituents selected from the group consisting of lower alkyls, lower alkoxys, lower alkenyloxys and lower alkylaminos.

4,621,091
3-HYDROXYBENZO[b]THIOPHENE-2-SULFIDE DERIVATIVES COMPOSITIONS, AND METHOD OF USE THEREFOR

Allan N. Tischler, Westfield, and Thomas J. Lanza, Jr., Edison, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 9, 1984, Ser. No. 658,859
Int. Cl.[4] A61K *31/34, 31/38;* C07D *333/64, 401/12*
U.S. Cl. 514—337 **9 Claims**

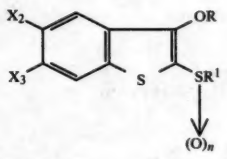
1. A compound of formula:



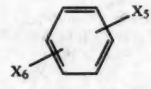
wherein X_2 and X_3 independently are
(a) H;
(b) loweralkyl;
(c) haloloweralkyl; or
(d) loweralkenyl;
R is H, C_{1-6} or C_{1-6}alkyl—CO—; and R^1 is
(a) C_{1-6}alkyl
(b) phenyl or substituted phenyl of formula

wherein X_5 and X_6 independently are:
(1) Q, where Q is H, loweralkyl, halolowerlalkyl, phenyl or naphthyl;
(2) halo;
(3) loweralkenyl;
(4) loweralkynyl;
(5) —SQ;
(6) —OQ;
(7) —CHQCOQ[1], where Q is Q^1 and can be the same as or different from Q^1;
(8) —CHQCOOQ[1];
(9) —CH_2SQ or —CHQSQ[1];
(10) —CH_2OQ or —CHQOQ[1];
(11) —COQ;
(12) —COOQ;
(13) —OCOQ;
(14) —NQQ[1];
(15) —NQCOQ[1];
(16) —$NQSO_2Q^1$;
(17) —SO_2NQQ^1;
(18) —SOQ;
(19) —SO_2Q;
(20) —SO_3Q;
(21) —CN;
(22) —NO_2;
(23) —CONQQ[1];
(24) —NO;
(25) —CSQ;
(26) —CSNQQ[1];
(27) —CF_2SQ;
(28) —CF_2OQ;
(29) —$NQCONQ^1Q^2$ wherein Q^2 is Q or Q^1 and can be the same or different from either of Q or Q^1;
(c) heteroaryl selected from a group consisting of thienyl, furyl, pyrryl and pyridyl, said group being substituted with X_5 and X_6;
(d) NH(CH=C)Ph_2 wherein Ph is phenyl; and
n is 0, 1 or 2.

4. A pharmaceutical composition for treating leukotrienes-mediated diseases which cause inflammation and pain in mammalian species comprising a pharmaceutically acceptable carrier and an effective amount of a compound of formula:



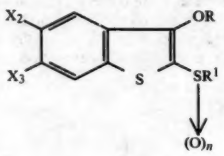
wherein X_2 and X_3 independently are
(a) H;
(b) loweralkyl;
(c) haloloweralkyl; or
(d) loweralkenyl;
R is H, C_{1-6} or C_{1-6}alkyl—CO—; and R^1 is
(a) C_{1-6}alkyl
(b) phenyl or substituted phenyl of formula



wherein X_5 and X_6 independently are:
(1) Q, where Q is H, loweralkyl, halolowerlakyl, phenyl or naphthyl;
(2) halo;
(3) loweralkenyl;
(4) loweralkynyl;
(5) —SQ;

(6) —OQ;
(7) —CHQCOQ^1, where Q is Q^1 and can be the same as or different from Q^1;
(8) —CHQCOOQ^1;
(9) —CH_2SQ or —CHQSQ^1;
(10) —CH_2OQ or —CHQOQ^1;
(11) —COQ;
(12) —COOQ;
(13) —OCOQ;
(14) —NQQ^1;
(15) —NQCOQ^1;
(16) —$NQSO_2Q^1$;
(17) —SO_2NQQ^1;
(18) —SOQ;
(19) —SO_2Q;
(20) —SO_3Q;
(21) —CN;
(22) —NO_2;
(23) —CONQQ^1;
(24) —NO;
(25) —CSQ;
(26) —CSNQQ^1;
(27) —CF_2SQ;
(28) —CF_2OQ;
(29) —NQCONQ^{1}Q^2 wherein Q^2 is Q or Q^1 and can be the same or different from either of Q or Q^1;
(c) heteroaryl selected from a group consisting of thienyl, furyl, pyrryl and pyridyl, said group being substituted with X_5 and X_6;
(d) NH(CH=C)Ph_2 wherein Ph is phenyl; and
n is 0, 1 or 2.

7. A method for the treatment of leukotrienes-mediated diseases which cause inflammation and pain comprising the administration to a mammalian species in need of such treatment a therapeutically effective amount of a compound of formula



wherein X_2 and X_3 independently are
(a) H;
(b) loweralkyl;
(c) halologweralkyl; or
(d) loweralkenyl;
R is H, C_{1-6} or C_{1-6}alkyl—CO—; and R^1 is
(a) C_{1-6}alkyl
(b) phenyl or substituted phenyl of formula

wherein X_5 and X_6 independently are:
(1) Q, where Q is H, loweralkyl, halolowerlakyl, phenyl or naphthyl;
(2) halo;
(3) loweralkenyl;
(4) loweralkynyl;
(5) —SQ;
(6) —OQ;
(7) —CHQCOQ^1, where Q is Q^1 and can be the same as or different from Q^1;
(8) —CHQCOOQ^1;
(9) —CH_2SQ or —CHQSQ^1;
(10) —CH_2OQ or —CHQOQ^1;
(11) —COQ;
(12) —COOQ;
(13) —OCOQ;
(14) —NQQ^1;
(15) —NQCOQ^1;
(16) —$NQSO_2Q^1$;
(17) —SO_2NQQ^1;
(18) —SOQ;
(19) —SO_2Q;
(20) —SO_3Q;
(21) —CN;
(22) —NO_2;
(23) —CONQQ^1;
(24) —NO;
(25) —CSQ;
(26) —CSNQQ^1;
(27) —CF_2SQ;
(28) —CF_2OQ;
(29) —NQCONQ^{1}Q^2 wherein Q^2 is Q or Q^1 and can be the same or different from either of Q or Q^1;
(c) heteroaryl selected from a group consisting of thienyl, furyl, pyrryl and pyridyl, said group being substituted with X_5 and X_6;
(d) NH(CH=C)Ph_2 wherein Ph is phenyl; and
n is 0, 1 or 2.

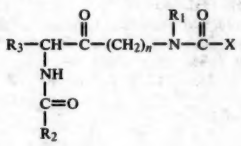
4,621,092

SUBSTITUTED PROLINE COMPOUNDS, COMPOSITION AND METHOD OF USE

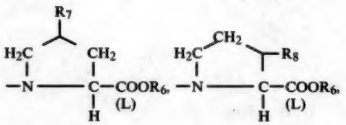
Sesha I. Natarajan, Neshanic Station, and Eric M. Gordon, Pennington, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

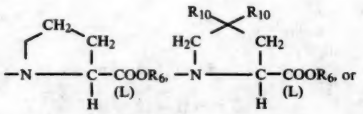
Continuation-in-part of Ser. No. 400,798, Jul. 22, 1982. This application Jul. 14, 1983, Ser. No. 513,931
Int. Cl.^{4} A61K *31/44*; C07D *401/12*
U.S. Cl. 514—343 **31 Claims**

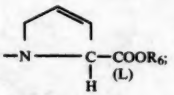
1. A compound of the formula



or a pharmaceutically acceptable salt thereof wherein X is

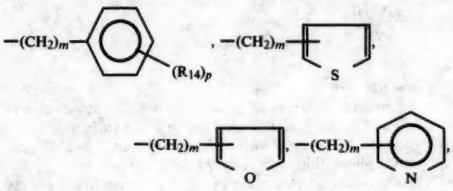




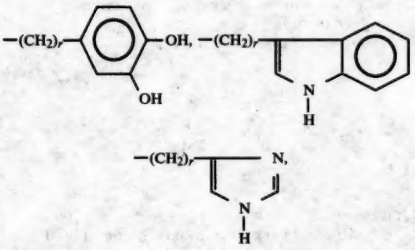


n is one or two;

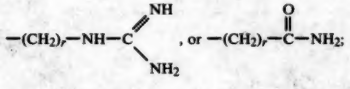
R_1 is hydrogen, lower alkyl, halo substituted lower alkyl,



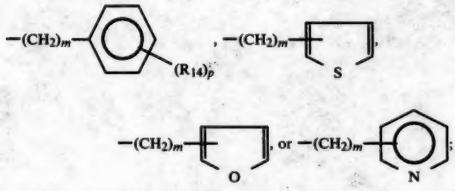
—$(CH_2)_m$-cycloalkyl wherein cycloalkyl is a saturated ring of 3 to 7 carbon atoms, —$(CH_2)_2$—NH_2, —$(CH_2)_3$—NH_2, —$(CH_2)_4$—NH_2, —$(CH_2)_r$—OH,



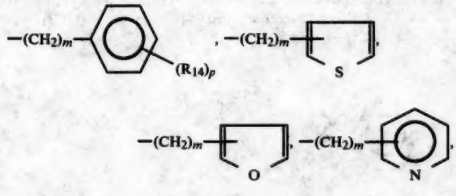
—$(CH_2)_r$—SH, —$(CH_2)_r$—S-lower alkyl,



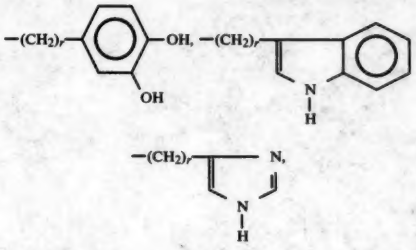
R_2 is



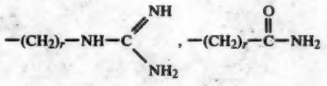
R_3 is hydrogen, lower alkyl,



halo substituted lower alkyl, —$(CH_2)_m$-cycloalkyl wherein cycloalkyl is a saturated ring of 3 to 7 carbon atoms,



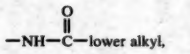
—$(CH_2)_r$—NH_2, —$(CH_2)_r$—SH, —$(CH_2)_r$—S-lower alkyl,



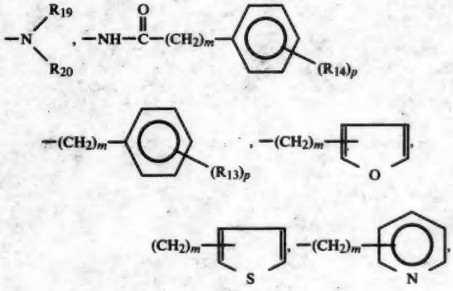
or —$(CH_2)_r$—OH;

r is an integer from 1 to 4;

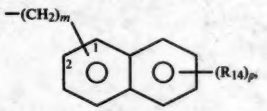
R_7 is hydrogen, lower alkyl, halogen, oxo, hydroxy,



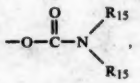
azido, amino,



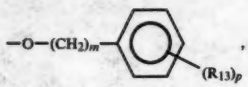
a 1- or 2-naphthyl of the formula



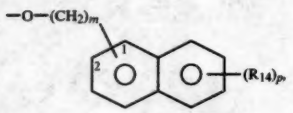
—$(CH_2)_m$-cycloalkyl wherein cycloalkyl is a saturated ring of 3 to 7 carbon atoms,



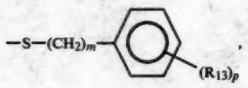
—O-lower alkyl,



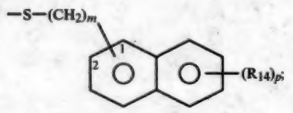
a 1- or 2-naphthyloxy of the formula



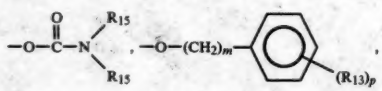
—S-lower alkyl,



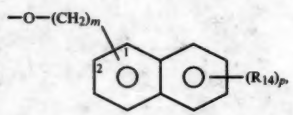
or a 1- or 2-naphthylthio of the formula



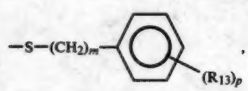
R_8 is oxo, halogen,



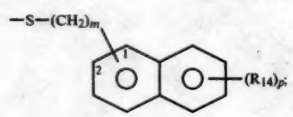
—O-lower alkyl, a 1- or 2-naphthyloxy of the formula



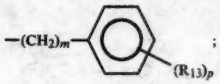
—S-lower alkyl,



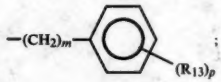
or a 1- or 2-naphthylthio of the formula



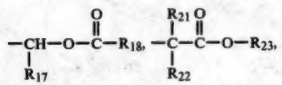
R_9 is oxo or

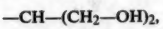


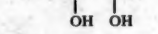
R_{10} is halogen or —Y—R_{16};
R_{13} is hydrogen, lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, bromo, fluoro, trifluoromethyl, hydroxy, phenyl, phenoxy, phenylthio, or phenylmethyl;
R_{14} is hydrogen, lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, bromo, fluoro, trifluoromethyl, or hydroxy;
m is zero, one, two, three, or four;
p is one, two or three provided that p is more than one only if R_{13} or R_{14} is hydrogen, methyl, methoxy, chloro, or fluoro;
R_{15} is hydrogen or lower alkyl of 1 to 4 carbons;
Y is oxygen or sulfur;
R_{16} is lower alkyl of 1 to 4 carbons, or

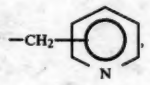


R_{19} is lower alkyl, benzyl, or phenethyl;
R_{20} is hydrogen, lower alkyl, benzyl or phenethyl;
R_6 is hydrogen, lower alkyl, benzyl, benzhydryl,









or a pharmaceutically acceptable salt forming ion;
R_{17} is hydrogen, lower alkyl, a saturated cycloalkyl ring of 3 to 7 carbon atoms, or phenyl;
R_{18} is hydrogen, lower alkyl, lower alkoxy or phenyl or R_{17} and R_{18} taken together are —$(CH_2)_2$—, —$(CH_2)_3$—, —CH=CH—, or

R_{21} and R_{22} are independently selected from hydrogen and lower alkyl; and
R_{23} is lower alkyl.

4,621,093

VASO-DILATING AND CORONARY ACTIVE 4-NITROPHENYL-TETRAHYDROPYRIDINES

Rosentreter Ulrich; Günter Thomas, and Andreas Knorr, all of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 8, 1985, Ser. No. 720,668

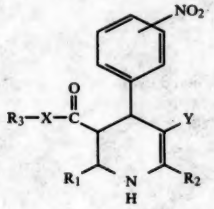
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1984, 3414801

The portion of the term of this patent subsequent to Feb. 4, 2003, has been disclaimed.

Int. Cl.[4] A61K *31/455;* C07D *211/78, 211/70*

U.S. Cl. 514—355 12 Claims

1. A 4-(nitrophenyl)-1,2,3,4-tetrahydropyridine of the formula



(I)

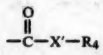
in which

R_1 and R_2 are identical or different and each represent hydrogen, phenyl or a straight-chain or branched alkyl radical which is optionally substituted by halogen or alkoxy,

R_3 represents a straight-chain or branched alkyl radical which is optionally substituted by alkoxy, halogen, alkylamino or aryl,

X represents a single bond, an oxygen atom, a sulphur atom or the NH group and

Y denotes the radical



wherein

X′ corresponds to the definition of X and can either be identical to X or different from X, and

R_4 corresponds to the definition of R_3 and can be either identical to R_3 or different from R_3,

or a physiologically acceptable salt thereof.

9. A composition exhibiting a nitrite-like effect of reducing the load on the heart, antifibrillation action, vasospasmolytic action and smooth muscle spasmolytic action comprising an amount effective therefor of a compound or salt according to claim 1 in admixture with a diluent.

4,621,094

ANTI-HISTAMINIC PYRIDYL COMPOUNDS

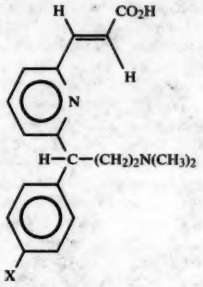
John W. A. Findlay, Rte. 2, Box 514, Chapel Hill, N.C. 27514, and Geoffrey G. Coker, No. 80 Pickhurst Park, Bromley, England

Continuation of Ser. No. 474,728, Mar. 10, 1983, abandoned. This application Dec. 19, 1984, Ser. No. 683,333

Int. Cl.[4] A61K *31/44;* C07D *213/55*

U.S. Cl. 514—357 26 Claims

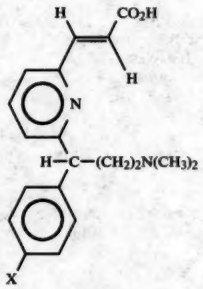
1. A compound of formula (I),



I

a straight or branched lower alkyl (1–4 carbon atoms) ester, or a pharmaceutically acceptable salt thereof wherein X is Cl or Br.

5. A method of relieving the detrimental effects of histamine in a mammal comprising administering to said mammal an effective amount of the compound of formula (I),



I

a straight or branched lower alkyl (1–4 carbon atoms) ester, or a pharmaceutically acceptable salt thereof; wherein X is Cl or Br.

4,621,095

SUBSTITUTED TERT.-BUTANOL DERIVATIVES AND ANTIMYCOTIC AGENTS CONTAINING THESE COMPOUNDS

Erik Regel, Wuppertal; Karl H. Büchel, Burscheid, and Manfred Plempel, Haan, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

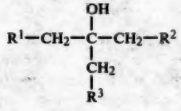
Filed Aug. 11, 1983, Ser. No. 522,423

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1982, 3232647

Int. Cl.[4] A01N *43/50, 43/56, 43/653;* C07D *401/06*

U.S. Cl. 514—383 16 Claims

1. A substituted tert.-butanol derivative of the formula



(I)

in which

R^1 and R^2 are identical or different and represent imidazol-1-yl, 1,2,4-triazol-1-yl; 1,2,4-triazol-4-yl or pyrazol-1-yl and

R^3 represents phenoxy, phenylthio, phenylimino or phenyl-N-alkyl-amino with 1 to 4 carbon atoms in the alkyl part,

each radical being optionally monosubstituted or polysubstituted by identical or different substituents, said substituents or phenyl in each case being: halogen, alkyl with 1 to 5 carbon atoms, alkoxy and alkylthio with in each case 1 to 4 carbon atoms; halogenoalkyl, halogenoalkoxy and halogenoalkylthio with in each case 1 to 4 carbon atoms and 1 to 5 identical or different halogen atoms; cycloalkyl with 5 or 6 carbon atoms; nitro, cyano, hydroxycarbonyl, alkylcarbonyl or alkoxycarbonyl with in each case 1 to 4 carbon atoms in the alkyl part, phenyl or phenoxy which is optionally monosubstituted or polysubstituted by identical or different substituents selected from the group consisting of halogen, nitro, trifluoromethyl and alkyl, with 1 to 2 carbon atoms, the aldehyde group or the oxime or hydroxyiminoethyl or methoxyiminomethyl radical.

9. A pharmaceutical composition containing as an active ingredient an antimycotically effective amount of a compound of claim 1 in admixture with an inert pharmaceutical carrier.

4,621,096

DENSIFIED HALOGENATED DIMETHYLHYDANTOINS

Leon M. Cole, West Lafayette, Ind., assignor to Great Lakes Chemical Corporation, West Lafayette, Ind.

Division of Ser. No. 429,160, Sep. 30, 1982, Pat. No. 4,532,330.
This application Mar. 26, 1985, Ser. No. 716,202
Int. Cl.[4] A01N *43/50*
U.S. Cl. 514—389 6 Claims

1. A densified halogenated hydantoin composition comprising:

a halogenated dimethylhydantoin;

about 1–5% water by weight of the composition; and

about 2–6% calcium chloride by weight of the composition.

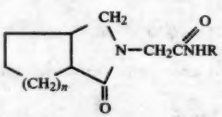
4,621,097

SATURATED CYCLOALKYL[c]PYRROLE-2(1H)-ACETIC ACID AMIDES AND DERIVATIVES THEREOF

Donald E. Butler, and John G. Topliss, both of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Aug. 16, 1985, Ser. No. 766,387
Int. Cl.[4] A61K *31/40;* C07D *209/46, 209/52*
U.S. Cl. 514—421 21 Claims

1. A compound having the structural formula



wherein n is one, two, or three; R is H, $(CH_2)_{n'}N(R'R'')$, in which n' is two or three; R' and R'' are each independently hydrogen or a straight or branched alkyl of from one to six carbon atoms or combined with the nitrogen to which they are attached form a five to seven-membered ring which may optionally be substituted with one or more alkyl groups of from one to four carbon atoms or pharmaceutically acceptable acid addition salts of the compound when R is $(CH_2)_{n'}N(R'R'')$.

19. A cognition activating pharmaceutical composition comprising an effective amount of a compound as defined in claim 1 in combination with a pharmaceutically acceptable carrier.

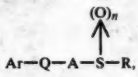
4,621,098

THIOETHERS AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Robert Umminger, Mannheim; Walter-Gunar Friebe, Darmstadt; Wolfgang Kampe, Heddesheim; Androniki Roesch, Mannheim, and Otto-Henning Wilhelms, Weinheim-Rittenweier, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Jul. 2, 1984, Ser. No. 626,690
Claims priority, application Fed. Rep. of Germany, Jul. 9, 1983, 3324916
Int. Cl.[4] C07C *147/107;* A61K *31/195*
U.S. Cl. 514—562 15 Claims

1. Thioethers of the formula:



(I)

wherein Ar is 4-acetyl-3-hydroxyphenyl, 4-acetyl-2-allyl-3-hydroxyphenyl, 4-acetyl-3-hydroxy-2-propylphenyl or 2-carboxyphenyl Q is oxygen;

A is

$-CH_2-CH_2-CH_2-$,
$-CH_2-CH_2-CH_2-CH_2-$,
$-CH_2-C\equiv C-CH_2-$ and
$-CH_2-CH(OH)-CH_2-$,

n is 0, 1 or 2, and

R is

C_1–C_4 alkyl, $-CH_2-COOH$,
$-CH_2-CH_2-COOH$,
$-CH_2-CH(NH_2)-COOH$ or $-CH_2-CH_2OH$

or a pharmacologically acceptable salt thereof.

13. Pharmaceutical composition for the treatment of allergic diseases comprising an antiallergic effective amount of the thioether of claim 1 in a pharmaceutically acceptable carrier.

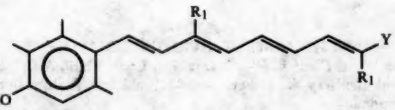
4,621,099

POLYENE COMPOUNDS USEFUL IN THE TREATMENT OF ALLERGIC RESPONSES

Bernard Loev, Scarsdale, and Wan-Kit Chan, Yorktown Heights, both of N.Y., assignors to USV Pharmaceutical Corporation, Tuckahoe, N.Y.

Filed Sep. 23, 1985, Ser. No. 778,952
Int. Cl.[4] A61K *31/19*
U.S. Cl. 514—570 2 Claims

1. A therapeutic composition for the treatment of inflammatory conditions and allergic responses in a human host, in combination with at least one pharmaceutically acceptable extender, a therapeutically effective amount of a compound of the formula



in which

R is H, lower alkyl of from 1 to 8 carbon atoms or aralkyl;

R_1 is H or lower alkyl from 1 to 5 carbon atoms; and

Y is carboxy, and pharmaceutically acceptable salts thereof.

4,621,100

TREATMENT OF OSTEOPOROSIS WITH PROSTAGLANDINS

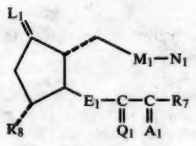
John E. Lund, Portage, and Wanda B. High, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 353,549, Mar. 8, 1982, abandoned, and a continuation-in-part of Ser. No. 305,580, Sep. 25, 1981, abandoned, which is a continuation-in-part of Ser. No. 247,421, Mar. 25, 1981, abandoned. This application Oct. 9, 1984, Ser. No. 659,138

Int. Cl.[4] A61K *31/557*

U.S. Cl. 514—573 **7 Claims**

1. A method for the treatment or prevention of non-growth related osteoporosis in an animal suffering from or susceptible to osteoporosis which comprises systemically administering to said animal an amount of a compound of the Formula I



wherein N_1 is

(1) —$COOR_1$, wherein R_1 is

(a) hydrogen,

(b) (C_1–C_{12})alkyl

(c) (C_1–C_{10})cycloalkyl,

(d) (C_6–C_{12})aralkyl,

(e) phenyl, optionally substituted with one, 2 or 3 chloro or (C_1–C_3)alkyl,

(f) phenyl substituted in the para position by

(i) —NH—CO—R_{25},

(ii) —CO—R_{26},

(iii) —O—CO—R_{54}, or

(iv) —CH=N—NH—CO—NH_2 wherein R_{25} is methyl, phenyl, acetamidophenyl, benzamidophenyl, or —NH_2; R_{26} is methyl, phenyl, —NH_2, or methoxy; and R_{54} is phenyl or acetamidophenyl; inclusive, or

(g) a pharmacologically acceptable cation;

(2) —CH_2OH,

(3) —COL_4, wherein L_4 is

(a) amino of the formula —$NR_{51}R_{52}$, wherein R_{51} and R_{52} are

(i) hydrogen

(ii) (C_1–C_{12})alkyl,

(iii) (C_3–C_{10})cycloalkyl,

(iv) (C_7–C_{12})aralkyl,

(v) phenyl, optionally substituted with one, 2 or 3 chloro, (C_1–C_3)alkyl, hydroxy, carboxy, (C_2–C_5)alkoxycarbonyl, or nitro,

(vi) (C_2–C_5)carboxyalkyl,

(vii) (C_2–C_5)carbamoylalkyl,

(viii) (C_2–C_5)cyanoalkyl,

(ix) (C_3–C_6)acetylalkyl,

(x) (C_7–C_{11})benzoalkyl, optionally substituted by one, 2 or 3 chloro, (C_1–C_3)alkyl, hydroxy, (C_1–C_3)alkoxy, carboxy, (C_2–C_5)alkoxycarbonyl, or nitro,

(xi) pyridyl, optionally substituted by one, 2 or 3 chloro, (C_1–C_3)alkyl, or (C_1–C_3)alkoxy,

(xii) (C_6–C_9)pyridylalkyl optionally substituted by one, 2 or 3 chloro, (C_1–C_3)alkyl,

(xiii) (C_1–C_4)hydroxyalkyl,

(xiv) (C_1–C_4)dihydroxyalkyl,

(xv) (C_1–C_4)trihydroxyalkyl,

with the further proviso that not more than one of R_{51} and R_{52} is other than hydrogen or alkyl,

(b) cycloamino selected from the group consisting of pyrolidino, piperidino, morpholino, piperazino, hexamethyleneimino, pyrrolino, or 3,4-didehydropiperidinyl optionally substituted by one or 2 (C_1–C_{12})alkyl of one to 12 carbon atoms, inclusive,

(c) carbonylamino of the formula —$NR_{53}COR_{51}$, wherein R_{53} is hydrogen or (C_1–C_4)alkyl and R_{51} is other than hydrogen, but otherwise as defined above,

(d) sulfonylamino of the formula —$NR_{53}SO_2R_{51}$, wherein R_{51} and R_{53} are as defined in (c),

(e) —$CH_2NL_2L_3$, wherein L_2 and L_3 are hydrogen or (C_1–C_4)alkyl, being the same or different, or the pharmacologically acceptable acid addition salts thereof when N_1 is —$CH_2NL_2L_3$,

(f) —CO_2R_1,

(g) —CH_2OH,

(h) —$CONR_5R_6$,

(i) —CH_2—NR_5R_6, or

(j) —$CONHSO_2CH_3$;

wherein M_1 is cis or trans—CH=CH—$(CH_2)_m$—, —$(CH_2)_n$—, —$(CH_2)_{n-1}$—CF_2—, —CO—$(CH_2)_3$—CH_2—, trans—$(CH_2)_m$—CH=CH—; —CH=CH—$(CH_2)_{m-1}$—CF_2—, or —CO—$(CH_2)_3$—CF_2—;

wherein L_1 is α—OH:β—H, =CH_2, or oxo;

wherein R_8 is hydrogen, hydroxy, or methyl;

wherein E_1 is trans—CH=CH, —CH_2—CH_2—, or —C≡C—;

wherein Q_1 is α—OH:β—R_2, α-R_2:β—OH, or oxo;

wherein A_1 is α—H:β—CH_3, α—CH_3:β—H; α—H:β—H, α—F:β—F or α—CH_3:β—CH_3;

wherein R_7 is:

(1) —$(CH_2)_p$—CH_3,

(2) cis—CH=CH—CH_2—CH_3,

(3) —$(CH_2)_2$—C≡CH,

(4) —$(CH_2)_3$—CH=$C(CH_3)_2$, or

(5) —$C(R_3R_4)$—$(CH_2)_g$—CH_2R_{14};

wherein R_2 is hydrogen or methyl;

wherein R_3 and R_4 are the same or different and are hydrogen or methyl;

wherein R_5 and R_6 are the same or different and are hydrogen, methyl, or ethyl;

wherein R_{14} is hydrogen or (C_1–C_4)alkyl;

wherein g is an integer of from one to 4, inclusive;

wherein m is an integer of from 3 to 5, inclusive;

wherein n is an integer of from 5 to 7, inclusive; 5 or 7; and

wherein p is an integer from one to 6, inclusive or the pharmacologically acceptable salts thereof when N_1 is —$CONR_5$.$_3SO_2R_{51}$; in an amount effective to treat or prevent said osteoporosis.

7. A method of claim 1, wherein said compound of the formula I is selected from the group consisting of

PGE_1;

2-decarboxy-2-hydroxymethyl-PGE_1;

PGE_2;

15-keto-PGE_2;

16,16-dimethyl-PGE_2;

17S,20-dimethyl-6-oxo-PGE_1, methyl ester;

17S,20-dimethyl-trans-delta-2-PGE_1;

PGE_2, N-methanesulfonylamide;

9-deoxo-9-methylene-16,16-dimethyl-PGE_2;

(15S)-15-methyl-PGE_2;

(15R)-15-methyl-PGE_2;

11-deoxy-16,16-dimethyl-PGE_2;

11-deoxy-11α-16,16-trimethyl-PGE_2;

6-oxo-11-deoxy-11α,16,16-trimethyl-PGE_2;

6-oxo-PGE_2;

6-oxo-PGE_1;

2-decarboxy-2-hydroxymethyl-PGE_1;

11-deoxy-15-methyl-PGE_1;

PGE_3;

16,16-difluoro-PGE_2; and

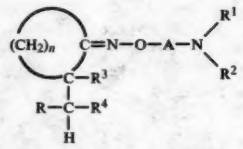
20-isopropylidene-PGE_1.

4,621,101
PHARMACEUTICAL COMPOSITIONS WITH ANTIANGINAL ACTIVITY

Zoltán Budai; Tibor Mezei; Aranka Lay nee Konya; Lujza Petocz; Katalin Grasser, and Zsuzsanna Orr, all of Budapest, Hungary, assignors to Egis Gyogyszergyar, Budapest, Hungary

Filed Jul. 2, 1985, Ser. No. 751,623
Claims priority, application Hungary, Jul. 10, 1984, 2679/84
Int. Cl.[4] A61K *31/15*
U.S. Cl. 514—640 **6 Claims**

1. A method of treating angina in an animal subject suffering therefrom which comprises administering to said animal subject a therapeutically effective amount of a compound of formula (I)



wherein n=4, 5 or 6, and if n=4, then
(A_1)
R^3 and R^4 together form a chemical bond,
R is phenyl,
A is trimethylene,
R^1 and R^2 are each a methyl group, and the molecule has an (E, Z) configuration; or
(A_2)
R^3 and R^4 together form a chemical bond,
R is 4-chlorophenyl,
A is ethylene,
R^1 is isopropyl,
R^2 is hydrogen, and the molecule has an (E, E) configuration; or
(A_3)
R^3 and R^4 together form a chemical bond,
R is 4-chlorophenyl,
A is trimethylene,
R^1 and R^2 are each an isopropyl group, and the molecule has an (E, E) configuration; or
(A_4)
R^3 and R^4 together form a chemical bond,
R is phenyl,
A_1 is trimethylene,
R^1 and R^2 are each an isopropyl group, and the molecule has an (E, E) configuration; or
(A_5)
R^3 and R^4 together form a chemical bond,
R is phenyl,
A is ethylene,
R^1 is isopropyl,
R^2 is hydrogen, and the molecule has an (E, E) configuration; or
(A_6)
R^3 and R^4 together form a chemical bond,
R is phenyl,
A is ethylene,
R^1 and R^2 are each an isopropyl group, and the molecule has an (E, E) configuration; or
if n=5, then
(B_1)
R^3 and R^4 together form a chemical bond,
R is phenyl,
A is ethylene,
R^1 and R^2 are each a methyl group, and the molecule has a (Z, E) configuration; or
(B_2)
R^3 and R^4 are each hydrogen,
R is phenyl,
A is ethylene,
R^1 and R^2 are each a methyl group, and the molecule has an (E, E) configuration; or
(B_3)
R^3 and R^4 together form a chemical bond,
R is phenyl,
A is ethylene,
R^1 and R^2 are each a methyl group, and the molecule has an (E, E) configuration; or
(B_4)
R^3 and R^4 together form a chemical bond,
R is phenyl,
A is ethylene,
R^1 and R^2 are each an isopropyl group, and the molecule has a (Z, E) configuration; or
if n=6, then
(C)
R^3 and R^4 together form a chemical bond,
R is phenyl,
A is trimethylene,
R^1 and R^2 are each a methyl group, and the molecule has an (E, E) configuration,
or a pharmaceutically acceptable acid addition salt thereof.

4,621,102
FISCHER-TROPSCH HYDROCARBON SYNTHESIS WITH HIGH SURFACE AREA CU AND K PROMOTED REDUCED-CARBIDED IRON/MANGANESE SPINELS

Rocco A. Fiato, Scotch Plains, and Stuart L. Soled, Pittstown, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 564,464, Dec. 20, 1983, abandoned. This application Dec. 26, 1985, Ser. No. 813,582
Int. Cl.[4] C07C *1/04*
U.S. Cl. 518—700 **21 Claims**

1. A process for synthesizing a hydrocarbon mixture containing C_2–C_{20} olefins comprising contacting a catalyst composition, comprising at least one unsupported, single phase, iron-manganese spinal dual promoted with both copper and a Group IA or IIA metal, said spinel exhibiting a single phase being isostructural with Fe_3O_4 as determined by powder X-ray diffractometry, and possessing a BET surface area greater than 30 m^2/g and an Fe:Mn atomic ratio of at least 2/1, with a mixture of CO and hydrogen under conditions of pressure, space velocity, and elevated temperature for a time sufficient to produce said C_2–C_{20} olefins.

4,621,103
AMINOPOLYOL ANION EXCHANGE RESINS FOR SEPARATION ISOTOPES

Masao Kosuge, Kitakyushu, and Junji Fukuda, Yokohama, both of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Filed Aug. 29, 1984, Ser. No. 645,489
Claims priority, application Japan, Nov. 11, 1983, 58-212246
Int. Cl.[4] C08D *5/20*
U.S. Cl. 521—28 **6 Claims**

1. An anion exchange resin for separating boron isotopes comprising a resin having an aminopolyol as a functional group and which has been treated with an alkali solution containing:
A: an alkali metal hydroxide or ammonium hydroxide; and
B: an alkali metal salt or an ammonium salt;
A being 0.5 to 10% by weight based on said alkali solution, and the ratio of equivalents of A to B being from 1:10 to 5:1, said resin adapted to be used in separation of boron isotopes by passing a boric acid solution through a column packed with said resin to form a boric acid adsorption band, and thereafter developing said adsorption band with an acid solution.

4,621,104

PROCESS FOR THE PRODUCTION OF LIQUID BROMINE-CONTAINING ALKOXYLATION PRODUCTS

Manfred Dietrich, Leverkusen; Manfred Schmidt, Dormagen; Rolf Wiedermann, Odenthal, and Klaus König, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 9, 1985, Ser. No. 785,710

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1984, 3438526

Int. Cl.[4] C08G *18/14*

U.S. Cl. 521—107 18 Claims

1. A process for the production of liquid bromine-containing alkoxylation products of butyne-(1,4)-diol which are storage stable comprising:

(a) reacting each mol of butyne-(1,4)-diol with from 1.5 to 2.5 mols alkylene oxide at elevated temperature in the presence of a catalyst selected from

(1) thioethers having a molecular weight of up to 5000 obtained by adding a mercaptan and/or mercaptoalcohol to an unsaturated hydrocarbon and/or

(2) thioethers other than those of (1) having a molecular weight of from 500 to 5,000 and/or

(3) alkali metal chlorides

to form an alkoxylation product,

(b) reacting the alkoxylation product of (a) with 0.6 to 1.9 mols of bromine for each mol of butyne-(1,4)-diol used in (a) at a temperature of from −10° to 80° C. to form a bromide,

(c) reoxidizing the bromide of (b) with aqueous hydrogen peroxide solution,

(d) stabilizing the bromide with from 0.3 to 3 wt. % relatively non-volatile epoxide and

(e) dehydrating the bromide.

4,621,105

PREPARATION OF FIRE RETARDANT FLEXIBLE POLYURETHANE FOAMS HAVING REDUCED DISCOLORATION AND SCORCH

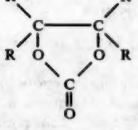
Garry L. Statton, West Chester, and James M. Gaul, Exton, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Aug. 20, 1985, Ser. No. 767,442

Int. Cl.[4] C08G *18/14, 18/16, 18/30*

U.S. Cl. 521—107 11 Claims

1. A method for the preparation of a scorch and discoloration stabilized fire retarded flexible polyurethane foam which comprises reacting an organic di- or polyisocyanate with a polyoxyalkylene polyether polol having a hydroxyl number of about 25 to 75 and a functionality of 2 to 3 in the presence of a fire retardant compound, a polyalkylene oxide siloxane block copolymer surfactant, a tertiary amine or organic metal salt catalyst, a blowing agent selected from the group consisting of water which reacts with the di- or polyisocyanate to generate carbon dioxide and fluorocarbons having a boiling point below 60° C. mixed with water and methylene chloride mixed with water and from about 1 to about 12 parts by weight based on the polyether polyol of a cyclic alkylene carbonate of the formula



wherein R is independently hydrogen, an alkyl group having from 1 to 8 carbon atoms, an alkenyl group having from 1 to 8 carbon atoms or a phenyl group.

4,621,106

POLYESTER POLYURETHANE FOAMS HAVING ANTISTATIC PROPERTIES

Roland N. Fracalossi; Walter V. V. Greenhouse, both of Baltimore, and Joseph S. Sollers, Lutherville, all of Md., assignors to Wm. T. Burnett & Co., Inc., Baltimore, Md.

Filed Feb. 5, 1985, Ser. No. 698,535

Int. Cl.[4] C08G *18/14, 18/34*

U.S. Cl. 521—130 16 Claims

1. A flexible polyurethane foam comprising the foamforming reaction product of water as a foaming agent, an isocyanate reactive polyester polyol and a polyisocyanate, and including uniformly contained in said foam an antistatic agent essentially consisting of the combination of a particulate electrically conductive material and a haloacetic acid, said water being present in an amount sufficient to provide a flexible foam, and said antistatic agent being present in an amount sufficient to provide antistatic characteristics to said foam.

9. The method of forming an antistatic flexible polyurethane foam comprising admixing a foam-forming composition including water as a foaming agent, a reactive polyester polyol, a polyisocyanate, and an antistatic agent essentially consisting of a combination of a particulate electrically conductive material and haloacetic acid; subjecting said foaming composition to foaming conditions to form a flexible polyurethane foam having said combination of antistatic agents uniformly contained in said foam, said water being present in an amount sufficient to form a flexible foam and said antistatic agent being present in an amount sufficient to provide antistatic characteristics to said foam.

4,621,107

FLUORINATED ELASTOMERIC MATERIALS

Richard J. Lagow, 6204 Shadow Mountain, Austin, Tex. 78731, and Earl T. Dumitru, 10116 Aspen St., Austin, Tex. 78758

Continuation of Ser. No. 407,700, Aug. 12, 1982, abandoned. This application Apr. 15, 1985, Ser. No. 722,984

Int. Cl.[4] C08F *8/22*

U.S. Cl. 522—131 12 Claims

1. A method of producing perfluorinated elastomers, comprising the steps of:

(a) providing a polymer having the following characteristics:

(1) a molecular weight of about 10,000 to about 10,000,000 daltons and a partially fluorinated backbone chain containing about 10 to about 65 mole percent fluorine; and

(2) moieties attached to the backbone chain selected from the group consisting of lower alkyl, lower alkyloxy, aryl and aryloxy groups;

(b) crosslinking the backbone chains of the polymer under conditions which minimize scission of the backbone chains; and

(c) perfluorinating the polymer.

4,621,108

GILSONITE-ASPHALT EMULSION COMPOSITION

Michael V. Burris, 2005 Plaza del Dios, Las Vegas, Nev. 89102

Filed Jun. 17, 1985, Ser. No. 744,990

Int. Cl.[4] C08L *7/00, 9/00, 95/00;* C08J *3/20*

U.S. Cl. 523—340 7 Claims

1. A base stock composition prepared by

(a) substantially removing water from a rubber latex to form a residue thereof,

(b) forming a blend of asphalt and gilsonite having an asphalt:gilsonite ratio of between about 99:1 and 5:95, by weight, respectively by mixing said asphalt and gilsonite at a temperature above about 300° F., and

(c) mixing between about 1% and about 50% of said rubber latex residue based on said blend with said asphalt and gilsonite blend to form said base stock having substantially no water therein.

3. A base stock composition having substantially no water

therein and comprising a blend of asphalt, gilsonite and rubber having an asphalt:gilsonite ratio of between about 99:1 and 5:95, by weight, respectively and having between about 1 and about 50% rubber based on the combined asphalt and gilsonite, by weight.

4,621,109

POLYPROPYLENE STABILIZING ANTI-OXIDANT 2,3-DIHYDROBENZ-4-OXA-1-THIIN DERIVATIVES, COMPOSITIONS AND METHOD OF USE THEREFOR

Peter Lechtken, Frankenthal; Hübert Traüth, Dudenhofen; Stefan Weiss, Neckargemuend, and Albert Hettche, Hesheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

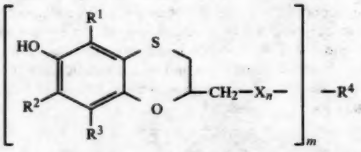
Filed Jun. 11, 1985, Ser. No. 743,682

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1984, 3421977

Int. Cl.[4] C07D *327/06;* C08K *5/46, 5/9*

U.S. Cl. 524—83 **4 Claims**

1. A 2,3-dihydrobenz-4-oxa-1-thiin of the formula I



I

where R^1, R^2 and R^3 are each hydrogen, methyl or methoxy, and R^2 and R^3 together may furthermore be a fused benzene ring, R^4 is hydrogen or an m-valent aliphatic C_2–C_{18}-hydrocarbon radical which may be interrupted by sulfur and/or carry thiol groups as substituents, or is halogen when n is zero, X is —O—, —S— or —O—CO—, m is 1 or 2 and n is zero or 1.

4,621,110

ALKYL-SUBSTITUTED 4-METHYL-PIPERIDINE DERIVATIVES AND USE THEREOF AS STABILIZERS

Piero Di Battista, Peschiera Borromeo, Italy, assignor to Montedison S.p.A., Milan, Italy

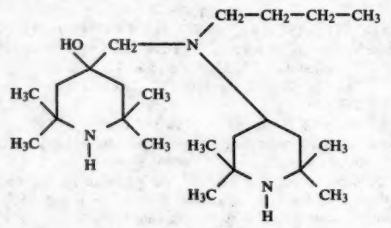
Filed Jan. 17, 1984, Ser. No. 571,436

Claims priority, application Italy, Jan. 19, 1983, 19172 A/83

Int. Cl.[4] C08K *5/34;* C07D *211/36*

U.S. Cl. 524—100 **31 Claims**

20. An alkyl-substituted 4-methyl-piperidine derivative having the formula:



21. A composition comprising a synthetic organic polymer stabilized to light, oxygen and heat by having, incorporated therein, in an amount sufficient to prevent any degrading action of the polymer, the alkyl-substituted 4-methyl-piperidine derivative of claim 20.

4,621,111

ACID BASE INTERACTING POLYMER SOLUTIONS

Ilan Duvdevani, Leonia; Donald N. Schulz, Annandale, both of N.J.; Kissho Kitano, Ohi, Japan, and Dennis G. Peiffer, E. Brunswick, N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

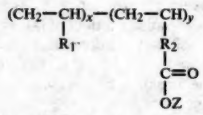
Continuation-in-part of Ser. No. 626,021, Jun. 29, 1984, abandoned, which is a continuation-in-part of Ser. No. 566,349, Dec. 28, 1983, abandoned. This application Dec. 2, 1985, Ser. No. 803,244

Int. Cl.[4] C10L *7/00;* C08K *5/51*

U.S. Cl. 524—107 **15 Claims**

1. A process for increasing the viscosity of a hydrocarbon liquid having a viscosity of at least about 10 cP which includes the steps of:

(a) forming a first solution of an organic hydrocarbon liquid and a hydrolyzed ester containing copolymer of an alpha-olefin and a vinyl alkylenecarboxylic acid copolymerized with a Ziegler-Natta catalyst having an acid content of from about 0.01 to 10 mole percent and a molecular weight of about 100,000 to about 10,000,000, wherein said copolymer of said alpha-olefin and said vinyl alkylenecarboxylic acid has the formula:



wherein Z is a mixture of H and an alkyl group having about 1 to about 25 carbon atoms, wherein H comprises about 55 to about 99 mole% of Z, R_1 is an alkyl group having about 1 to about 25 carbon atoms, R_2 is an alkylene group having about 1 to about 17 carbon atoms, x is about 99.99 to about 95.0 mole %; and

(b) forming a second solution of an organic hydrocarbon liquid and an amine containing polymer which contains basic nitrogen atoms wherein the basic nitrogen content ranges from about 4 to about 500 milliequivalents per 100 gms. of polymer;

(c) mixing said first and said second solutions to form a hydrocarbon solution liquid having an interpolymer complex of said neutralized copolymer of an alpha-olefin and a vinyl alkylenecarboxylic acid and said amine containing polymer therein, wherein said complex is present at a level of from 0.01% to about 10%; and

(d) subjecting said hydrocarbon solution of said interpolymer complex to an increasing shear rate thereby causing the viscosity of said hydrocarbon solution to said interpolymer complex to increase.

4,621,112

WATER-BORN COATING COMPOSITIONS COMPRISING METALLIC POWDER OR FLAKE PIGMENTS

Alan J. Backhouse, South Ascot; Andrew Frangou, Surrey, and Stephen J. Thorne, Berkshire, all of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Jul. 26, 1985, Ser. No. 759,239

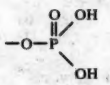
Claims priority, application United Kingdom, Aug. 2, 1984, 8419719

Int. Cl.[4] B05D *1/36, 5/06;* C09D *5/02, 5/38*

U.S. Cl. 524—145 **14 Claims**

1. A water-borne coating composition comprising a film-forming polymer, a metallic pigment and an aqueous diluent medium, wherein the tendency of the pigment to react with the aqueous medium and release gaseous material is prevented or reduced by the incorporation in the composition of an agent which contains in the molecule at least one acidic hydroxyl group linked to a phosphorus atom, or a salt derivative thereof,

and which is the reaction product of (i) a compound containing in the molecule the grouping



with (ii) one or more compounds which contain in the molecule at least one epoxide group and at least one of which also contains in the molecule at least one aromatic or alicyclic group, provided that, if the component (i) or one of the compounds (ii), or both, contain an aliphatic group of more than 6 carbon atoms, the total proportion of such aliphatic groups in the reaction product does not exceed 65% by weight.

4,621,113

REPEATING BLOCK, OLIGOMER-FREE, POLYPHASE, THERMOFORMABLE POLYURETHANES AND METHOD OF PREPARATION THEREOF

Guy R. Collins, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 7, 1985, Ser. No. 785,294
Int. Cl.[4] C08G *18/10*
U.S. Cl. 524—196 60 Claims

1. The method of preparing a urethane prepolymer composition in which said prepolymer consists essentially of generally linear molecules terminated at each end by an isocyanate group, said molecules consisting of n branched, polyether glycol residues joined, through intervening carbamate groups, with (n+1) diisocyanate residues, n ranging from 1 to about 4 and the average value of n being within the range of from about 1.5 to about 1.7;

said method comprising

(1) providing one molecular proportion of a methylol-terminated, branched polyether glycol, optionally in admixture with an amount of a catalyst insufficient to cause gelling if the prepolymer composition-to-be is later mixed with a chain extender,

(2) while stirring said glycol or glycol/catalyst mixture and heating as may be necessary to drive the reaction, incrementally adding to it at least two molecular proportions of a non-aromatic diisocyanate, and

(3) allowing the reaction to proceed until the isocyanate content has dropped by an amount corresponding to complete conversion of the glycol,

said glycol having a weight average molecular weight of from about 1000 to about 6000 and consisting essentially of chains of —O—CRR′—CH_2—units in which each of R and R′ is H, methyl or ethyl, independently, except that in at least a preponderance of said units one or the other of R and R′ is not H.

4,621,114

PROPYLENE RESIN COMPOSITION

Junichi Watanabe, Nagoya, Japan, assignor to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Jul. 2, 1984, Ser. No. 626,920
Claims priority, application Japan, Jul. 4, 1983, 58-120286
Int. Cl.[4] C08K *3/34*; C08L *53/00*
U.S. Cl. 524—451 2 Claims

1. A propylene resin composition composed of

(A) 50 to 70% by weight, based on the total weight of (A), (B) and (C), of a propylene-ethylene block copolymer which has an ethylene content of 16.5 to 35 mole % and a melt flow rate (MFR) of 10 to 60 g/10 min. and in which the propylene component has an isotacticity index of at least 95%,

(B) 25 to 40% by weight, based on the total weight of (A), (B) and (C), of a random copolymer of ethylene with an alpha-olefin having at least 3 carbon atoms which has an ethylene content of 60 to 85 mole %, a melt flow rate of 0.1 to 2 g/10 min. and a crystallinity, determined by the X-ray method, of not more than 10, and

(C) 3 to 20% by weight, based on the total weight of (A), (B) and (C), of talc powder having an average particle size of 0.1 to 5 microns.

4,621,115

GLASS FIBER REINFORCED POLYPROPYLENE COMPOSITIONS COMPRISING CRYSTALLINE E-P BLOCK COPOLYMER GRAFT MODIFIED WITH ITACONIC ANHYDRIDE

Hideyo Morita; Tomohiko Akagawa, and Yasuo Kita, all of Sakai, Japan, assignors to Ube Industries, Ltd., Ube, Japan

Filed Apr. 22, 1985, Ser. No. 725,580
Claims priority, application Japan, Apr. 27, 1984, 59-84146
Int. Cl.[4] C08K *9/06, 3/40*
U.S. Cl. 524—494 20 Claims

1. A glass fiber reinforced polypropylene composition comprising 50 to 85% by weight of a crystalline ethylene-propylene block copolymer which has been graft-modified with itaconic anhydride, 5 to 45% by weight of a glass fiber and 3 to 20% by weight of a polyolefin rubber which has been graft-modified with an unsaturated carboxylic acid (100% by weight in total).

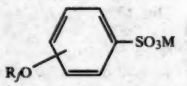
4,621,116

PROCESS FOR COPOLYMERIZATION OF TETRAFLUOROETHYLENE IN THE PRESENCE OF A DISPERSING AGENT COMPRISING A PERFLUOROALKOXYBENZENE SULFONIC ACID OR SALT

Richard A. Morgan, Vienna, W. Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 679,367, Dec. 7, 1984, abandoned. This application Nov. 20, 1985, Ser. No. 798,784
Int. Cl.[4] C08F *214/24*
U.S. Cl. 524—746 7 Claims

1. In the polymerization process to obtain an aqueous dispersion of a melt-processible copolymer of tetrafluoroethylene and at least one ethylenically unsaturated comonomer present in the copolymer in an amount of up to 20 mole percent, wherein the copolymer comprises 15–45 wt. % of the aqueous dispersion, in the presence of an initiator and a dispersing agent, the process improvement which comprises employing as the dispersing agent a perfluoroalkoxybenzene sulfonic acid or a salt thereof of the formula



wherein R_f is a linear or branched perfluorinated alkyl radical of from 4 to 18 carbon atoms, and M is hydrogen, ammonium or an alkali metal, said dispersing agent being present in an amount between 0.02 and 0.5% based on weight of final copolymer dispersion obtained.

4,621,117

ACRYLONITRILE-FREE POLYCARBONATE BLENDS

Frank Wingler, Leverkusen; Otto Koch; Christian Lindner, Cologne, and Klaus Reinking, Wermelskirchen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 763,513, Aug. 8, 1985, abandoned. This application Feb. 18, 1986, Ser. No. 830,177

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1984, 3430688

Int. Cl.[4] C08L *69/00*

U.S. Cl. 525—67 1 Claim

1. Thermoplastic blend of moulding composition compounds comprising

(A) 20–78 parts by weight (based on the moulding compounds) of a randomly structured copolymer of

(a_1) 12 to 92 parts by weight (based on the copolymer) of styrene, p-methylstyrene or mixtures thereof,

(a_2) 8 to 30 parts by weight (based on the copolymer) of a mixture of 100 to 10% by weight of N-phenyl- or N-methylmaleimide and 0 to 90% by weight of maleic acid anhydride,

(a_3) 0 to 80 parts by weight (based on the copolymer) of methylmethacrylate,

(B) 12–60 parts by weight (based on the moulding compounds) of a thermoplastic dihydroxy dialkane polycarbonate and

(C) 10–40 parts by weight (based on the moulding compounds) of a graft polymer of 20 to 80 parts by weight of methylmethacrylate on 80 to 20 parts by weight of a rubber having a glass transition temperature below −20° C.

4,621,118

SULFURIZED GUAYULE RESIN AND RUBBER

William W. Schloman, Jr., Stow, and James A. Davis, Uniontown, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Mar. 21, 1985, Ser. No. 714,583

Int. Cl.[4] C08L *7/00, 75/04*

U.S. Cl. 525—130 10 Claims

1. A rubber composition comprising;

a blend of a rubber and a sulfurized guayule resin having a high softening point, said guayule resin chemically treated with sulfur at a temperature of from 150° C. to about 200° C., the amount of said sulfur being from about 42 parts to about 900 parts by weight per 100 parts by weight of said guayule resin, said sulfurized guayule resin having a softening point of at least 70° C. according to ASTM Test E28-67, the amount of said sulfurized guayule resin being an effective amount to impart reduced hysteresis loss.

4,621,119

POLYPROPYLENE-POLYETHYLENE-(ETHYLENE-PROPYLENE RUBBER) COMPOSITIONS AND FILMS THEREOF WITH IMPROVED TEAR STRENGTH

Pang-Chia Lu, Pittsford, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 27, 1984, Ser. No. 686,810

Int. Cl.[4] C08L *23/04*

U.S. Cl. 525—240 8 Claims

1. A biaxially oriented polypropylene film comprising

(a) 51–94 weight percent of polypropylene;

(b) 5–40 weight percent of a linear low density polyethylene (LLDPE) comprising a copolymer of ethylene and an aliphatic monoolefin having 4 to 8 carbon atoms; and

(c) 1–10 weight percent of an ethylene-propylene rubber;

said film having improved tear strength compared to the film absent the (b) and (c) components.

4,621,120

POLYMERIC ANTIBACTERIAL COMPOSITIONS

Kenneth R. Hollister, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 1, 1985, Ser. No. 718,303

Int. Cl.[4] C08F *114/02, 214/02;* A01N *33/12*

U.S. Cl. 525—327.1 16 Claims

1. A water-dispersible vinyl copolymer comprising

(a) from 15 to 90 mole percent of recurring polymerized vinyl monomer units having a quaternary nitrogen cationic group containing an alkyl substituent having 14 to 20 carbon atoms and

(b) from 10 to 85 mole percent recurring polymerized vinyl monomer units having a quaternary nitrogen cationic group having one or more alkyl substituents containing less than 14 carbon atoms.

4,621,121

VULCANIZABLE MIXTURE CONTAINING BIS-(2-ETHYLAMINO-S-TRIAZIN-6-YL)-TETRASULFIDE

Werner Schwarze, Frankfurt am Main; Siegfried Wolff, Bornheim-Merten; Hans Remmel, Freigericht, and Horst Lambertz, Hürth, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jan. 22, 1985, Ser. No. 693,343

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1984, 3438290

Int. Cl.[4] C08F *8/34*

U.S. Cl. 525—329.3 12 Claims

1. A vulcanizable composition comprising bis-(2-ethylamino-4-diethylamino-s-triazin-6-yl)-tetrasulfide as an accelerator and a vulcanizable rubber selected from the group consisting of natural rubber, isoprene rubber, styrene-butadiene rubber, isobutylene-isoprene rubber, ethylene-propylene terpolymer rubber, nitrile rubber, halogen containing rubber, and natural rubber which is epoxidized up to 75%, the amount of triazinyl tetrasulfide being 0.3 to 15 parts based on 100 parts of the rubber.

4,621,122

HIGH-TEMPERATURE RESISTANT ELECTRICALLY INSULATING COATING POWDER

Curtis R. Guilbert, St. Paul, Minn., and Peter Fialla, Wiener Neudorf, Austria, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 617,324, Jun. 5, 1984, abandoned. This application Mar. 6, 1985, Ser. No. 708,701

Int. Cl.[4] C08L *63/00, 79/08*

U.S. Cl. 525—422 31 Claims

1. Powder useful for application to a heated substrate where it softens, flows together, and reacts to form a continuous infusible electrically insulating coating, comprising a blend of

(a) epoxy-terminated adduct of hydantoin diepoxide and aromatic dicarboxylic acid imide, and

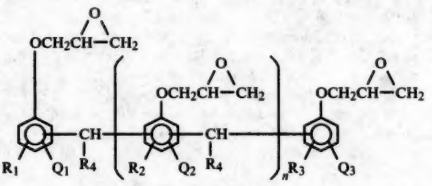
(b) acid-terminated polyester of aromatic dicarboxylic acid and diphenol containing one aromatic ring pendant from a central carbon atom.

4,621,123
PHOSPHINYLMETHYL POLYPENOLS AND POLYGLYCIDYL ETHERS THEREOF

Hisao Takagishi, Kyoto; Kazunori Kawakami, Osaka; Kunimasa Kamio, Suita, and Khoichi Okuno, Izumiotsu, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

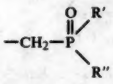
Filed Dec. 16, 1985, Ser. No. 809,007
Claims priority, application Japan, Dec. 20, 1984, 59-270086; Dec. 20, 1984, 59-270087
Int. Cl.[4] C07D *407/14;* C07F *9/53;* C08G *61/02*
U.S. Cl. 525—507 29 Claims

1. A phosphorus-containing polyglycidyl ether represented by the following general formula (I)



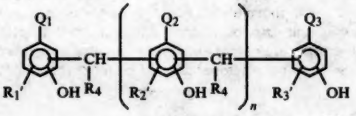
(I)

wherein Q_1, Q_2 and Q_3 which may be same or different are a hydrogen atom, an aliphatic group, an aromatic group or a phosphorus-containing group represented by the formula



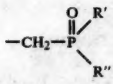
wherein R′ and R″ which may be same or different are an aliphatic group or an aromatic group; at least one of Q_1, Q_2 and Q_3 is said phosphorus-containing group; R_1, R_2 and R_3 which may be same or different are a hydrogen atom, a halogen atom, a glycidyl ether group, an aliphatic group or an aromatic group; R_4 is a hydrogen atom or an alkyl group of 1 to 4 carbon atoms; and n is a number of 0 or above.

13. A phosphorus-containing polyphenol compound represented by the following general formula (II)



(II)

wherein Q_1, Q_2 and Q_3 which may be same or different are a hydrogen atom, an aliphatic group, an aromatic group or a phosphorus-containing group represented by the formula

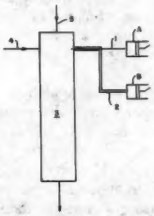


wherein R′ and R″ which may be same or different are an aliphatic group or an aromatic group; at least one of Q_1, Q_2 and Q_3 is said phosphorus-containing group; R_1', R_2' and R_3' which may be same or different are a hydrogen atom, a halogen atom, a hydroxyl group, an aliphatic group or an aromatic group; R_4 is a hydrogen atom or an alkyl group of 1 to 4 carbon atoms; and n is a number of 0 or above.

4,621,124
CATALYST SYSTEM FOR THE POLYMERIZATION OF ETHYLENE

Jean-Marie Neyer; Jean-Pierre Machon, both of Bethune, and Karel Bujadoux, Lens, all of France, assignors to Societe Chimique des Charbonnages-CdF Chimie, Paris, France

Continuation of Ser. No. 177,432, Aug. 12, 1980, abandoned, which is a continuation of Ser. No. 948,157, Oct. 3, 1978, abandoned, which is a continuation of Ser. No. 770,271, Feb. 22, 1977, abandoned. This application Sep. 16, 1985, Ser. No. 775,711
Claims priority, application France, Feb. 25, 1976, 76 05258
Int. Cl.[4] C08F *4/02, 10/02*
U.S. Cl. 526—125 3 Claims



1. In a process for the polymerization of ethylene at a temperature of between 210° and 340° C. under a pressure of between 200 and 2,500 bars in at least one reaction zone, the improvement comprising polymerizing the ethylene in the zone in the presence of a catalyst system consisting essentially of (A) an activator selected from the group consisting of alkylaluminums and alkylsiloxalanes and (B) a compound of the formula:

$$(TiCl_a)(MgCl_2)_y(AlCl_3)_z(RMgCl)_b$$

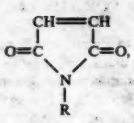
in which
the valence of titanium a is from 2 to 3;
y is 2 or more;
z is from 0 to $\frac{1}{3}$;
b is from 0 to 1; and
R is an aliphatic or aromatic hydrocarbon radical,
said compound (B) being prepared in the reaction zone by injecting separately and concentrically into the reaction zone violet titanium trichloride and anhydrous magnesium chloride, the ratio of activator (A) to compound (B) being such as to give an atomic ratio of Al/Ti of between 1 and 10, in order to achieve a productivity of at least 480 kg polymer per hour per milliatom of titanium.

4,621,125
TRIS(DISUBSTITUTED AMINO)SULFONIUM PERFLUOROALKOXIDES AND -PERFLUOROALKYLMERCAPTIDES AND PROCESS FOR THEIR PREPARATION

William B. Farnham, Wilmington, Del., and William J. Middleton, Chadds Ford, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 618,736, Jun. 8, 1984. This application Jul. 12, 1985, Ser. No. 754,140
Int. Cl.[4] C08F *4/16, 2/00*
U.S. Cl. 526—190 6 Claims

1. Process of polymerizing one or more α,β-unsaturated compounds of the formulas $CH_2{=}C(Y)X$ and



and mixtures thereof,

wherein:

X is —CN, —CH=CHC(O)X′ or —C(O)X′;

Y is —H, —CH_3, —CN or —CO_2R, provided, however, when X is —CH=CHC(O)X′, Y is —H or —CH_3;

X′ is —$OSi(R^1)_3$, —R, —OR or —NR′R″;

each R^1, independently, is a hydrocarbyl radical which is an aliphatic, alicyclic, aromatic or mixed aliphatic-aromatic radical containing up to 20 carbon atoms or —H, provided that at least one R^1 group is not —H;

R is:

(a) a hydrocarbyl radical which is an aliphatic, alicyclic, aromatic or mixed aliphatic-aromatic radical containing up to 20 carbon atoms;

(b) a polymeric radical containing at least 20 carbon atoms;

(c) a radical of (a) or (b) containing one or more ether oxygen atoms within aliphatic segments thereof;

(d) a radical of (a), (b) or (c) containing one or more functional substituents that are unreactive under polymerizing conditions; or

(e) a radical of (a), (b), (c) or (d) containing one or more reactive substituents of the formula —Z′(O)C—C(Y^1)=CH_2 wherein Y^1 is —H or —CH_3 and Z′ is O or NR′ wherein R′ is as defined below; and

each of R′ and R″ is independently selected from C_{1-4} alkyl,

the process comprising contacting said compounds under group transfer polymerizing conditions in the presence of a suitable silicon-, germanium- or tin-containing initiator and as the catalyst the tris(disubstituted amino)sulfonium perfluoroalkoxide of the formula

wherein

R^1 through R^6, each selected independently, are C_{1-20} alkyl, each having at least 2 alpha hydrogen atoms, or any or all of the pairs R^1 and R^2, R^3 and R^4, and R^5 and R^6, each pair selected independently, are —CH_2—$_4$ or —CH_2—$_2$CHY—CH_2—$_2$, wherein Y is hydrogen or methyl; and

R_f^1 and R_f^2, each selected independently, are F, C_{1-12} perfluoroalkyl, C_{2-12} perfluoro(alkoxyalkyl), C_{3-12} perfluoro(alkoxyalkoxyalkyl), C_{4-12} perfluorocycloalkyl, or XR_f^3 wherein R_f^3 is C_{1-12} perfluoroalkylene or C_{4-12} perfluorocycloalkylene and X is Cl, Br or I, or R_f^1 and R_f^2 taken together are —CF_2—$_n$ wherein n is an integer and is 2 to 6.

4,621,126

GROUP TRANSFER POLYMERIZATION EMPLOYING TRIS(DISUBSTITUTED AMINO)SULFONIUM PERFLUOROCARBANION SALTS AS CATALYSTS

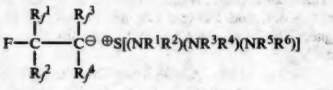
William J. Middleton, Chadds Ford, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 618,737, Jun. 8, 1984, Pat. No. 4,535,184. This application May 7, 1985, Ser. No. 731,499

Int. Cl.[4] C08F *4/00, 18/10*

U.S. Cl. 526—192 **7 Claims**

1. In a group transfer polymerization process of monomer in the presence of a suitable silicon-, germanium- or tin-containing initiator and a catalyst, said process characterized in that the catalyst is the tris(disubstituted amino)sulfonium perfluorocarbanion salt of the formula



wherein

R^1 through R^6, each selected independently, are C_1–C_{20} alkyl, each having at least 2 alpha hydrogen atoms, or any or all of the pairs R^1 and R^2, R^3 and R^4, and R^5 and R^6, each pair selected independently, are —CH_2—$_4$ or —CH_2—$_2$CHY—CH_2—$_2$, wherein Y is hydrogen or methyl;

R_f^1, R_f^2 and R_f^3, each selected independently, are F, C_{1-20} perfluoroalkyl or C_{4-12} perfluorocycloalkyl; and

R_f^4 is C_{1-20} perfluoroalkyl or C_{4-12} perfluorocycloalkyl; or any one of the pairs R_f^1 and R_f^2, R_f^3 and R_f^4, R_f^1 and R_f^3, and R_f^2 and R_f^4, taken together, is —CF_2—$_n$ wherein n is an integer and is 2 to 6; or

each of the pairs R_f^1 and R_f^2 and R_f^3 and R_f^4, or each of the pairs R_f^1 and R_f^3 and R_f^2 and R_f^4, taken together, is —CF_2—$_n$ wherein n, each selected independently, is an integer and is 2 to 6.

4,621,127

PREPARATION OF CARBOXYL-CONTAINING POLYMERS

Walter Denzinger, Speyer; Heinrich Hartmann, Limburgerhof; Johannes Perner, Neustadt, and Hans-Juergen Raubenheimer, Ketsch, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

Filed Sep. 18, 1985, Ser. No. 777,328

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1984, 3434139

Int. Cl.[4] C08F *22/04*

U.S. Cl. 526—193 **14 Claims**

1. A process for the preparation of a carboxyl-containing polymer which is water soluble, at least in the neutralized form, which comprises: polymerizing a monoethylenically unsaturated C_3–C_4-carboxylic acid and from 0–40 percent by weight of a carboxyl group-free copolymerizable ethylenically unsaturated monomer in an aqueous solution which contains a polymerization initiator and from 0.01 to 5 percent by weight based on the monomer, of a compound which is selected from the group consisting of hypodiphosphorous acid, hypodiphosphorous acid salts, phosphorous acid, phosphorous acid salts, diphosphorous acid, diphosphorous acid salts, water soluble —$PO(OH)_2$-containing compounds, water-soluble salts thereof and mixtures thereof at a temperature of no more than 160° C.

4,621,128

HARDENER SOLUTION FOR EPOXIDE RESIN MASSES

Joachim von Seyerl, Seeon, Fed. Rep. of Germany, assignor to SKW Trostberg Aktiengesellschaft, Trostberg, Fed. Rep. of Germany

Filed Nov. 19, 1984, Ser. No. 673,164

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1983, 3332553

Int. Cl.[4] C08G *59/50*

U.S. Cl. 528—93 **9 Claims**

1. Dicyandiamide hardener solution for epoxide resin masses, consisting essentially of

(a) 50 to 90 parts by weight of dimethylformamide,

(b) 5 to 50 parts by weight of a low boiling ketone and/or alcohol and

(c) 5 to 32 parts by weight of dicyandiamide, referred to 100 parts by weight of the sum of components (a) and (b)

and optionally from 1 to 10% by weight referred to the dicyandiamide content, of a hardening accelerator.

4,621,129

PROCESS FOR PRODUCING MELTING-ANISOTROPIC, COPOLYMERIZED POLYESTER

Tamotsu Yoshimura, Machida; Masahiko Nakamura, Tokyo, and Ken Honma, Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

PCT No. PCT/JP85/00094, § 371 Date Oct. 31, 1985, § 102(e) Date Oct. 31, 1985, PCT Pub. No. WO85/03941, PCT Pub. Date Sep. 12, 1985

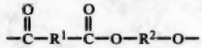
PCT Filed Feb. 28, 1985, Ser. No. 800,127

Claims priority, application Japan, Mar. 6, 1984, 59-42266

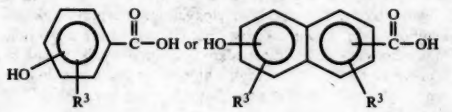
Int. Cl.[4] C08G *63/60, 63/76*

U.S. Cl. 528—176 4 Claims

1. A process for producing a melting-anisotropic, copolymerized polyester containing an alkylene terephthalate component, which comprises reacting 95 to 5 mol % of a starting polyester composed of a dicarboxylic acid and a diol having of recurring units represented by the general formula:



where R^1 represents a divalent aromatic radical of 6 to 20 carbon atoms or a divalent cycloaliphatic radical of 4 to 20 carbon atoms, and R^2 represents a divalent aliphatic radical of 2 to 20 carbon atoms, with from 5 to 95 mol % of an oxyaromatic carboxylic acid represented by the general formula:



where R^3 represents a hydrogen atom, a halogen atom, an alkyl or alkoxy group of 1 to 4 carbon atoms to form a copolymerized oligomer, then conducting acylating reaction by the addition of an acylating agent and, further conducting polycondensating reaction in order to increase the logarithmic viscosity thereby producing a copolymerized polyester having a logarithmic viscosity of at least 0.2 dl/g.

4,621,130

COPOLYESTER-CARBONATE RESINS WITH IMPROVED MOLD RELEASE PROPERTIES

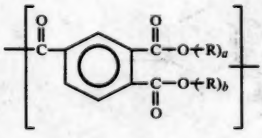
Niles R. Rosenquist, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Sep. 16, 1985, Ser. No. 776,423

Int. Cl.[4] C08G *63/62*

U.S. Cl. 528—176 10 Claims

1. A thermoplastic polyester-carbonate resin containing in the polymer chain, divalent moieties of the formula:



(I)

wherein R represents alkyl of from about 10 to 36 carbon atoms, inclusive; a and b are each whole number integers of from 0 to 1; and the sum of a +b is 1.

4,621,131

POLYESTERS DERIVED FROM 2,2-DIMETHYL-4-METHYLENEGLUTARIC ACID AND COATINGS PREPARED THEREFROM

Ju-Chui Lin, Strongsville; Gary M. Carlson, Dublin, and Kirk J. Abbey, Seville, all of Ohio, assignors to SCM Corporation, New York, N.Y.

Filed Feb. 6, 1986, Ser. No. 826,690

Int. Cl.[4] C08G *63/02, 63/54*

U.S. Cl. 528—192 7 Claims

1. A sterically structured linear polyester oligomer containing tertiary ester linkages and pendant methylene unsaturation along the polymer chain and suitable for imparting hydrolytic stability to coatings comprises the reaction product of lower alkyl diester of 2,2-dimethyl-4-methyleneglutaric acid with hindered polyols under transesterification catalysis in a mole ratio of 1.5 to 2.5 moles hindered polyol calculated as difunctional diol per 1.0 mole of diester.

2. The polyester oligomer of claim 1 wherein the ester is dimethyl 2,2-dimethyl-4-methylene glutarate, the hindered polyol is selected from the group consisting of neopentyl glycol, trimethylol propane, 2,2-diethyl-1,3-propanediol, 2-methyl-1,3-propanediol, pentaerythritol, 1,4-cyclohexanedimethanol, bisphenol A and hydrogenated bisphenol A, and the weight average molecular weight of the oligomer is not above 1,500.

4,621,132

BRANCHED COPOLYESTER-CARBONATE RESINS

Clayton B. Quinn, and William Hilakos, both of Mt. Vernon, Ind., assignors to General Electric Company, Mt. Vernon, Ind.

Continuation-in-part of Ser. No. 452,120, Dec. 22, 1982, abandoned. This application Jun. 27, 1984, Ser. No. 625,260

Int. Cl.[4] C08G *63/64*

U.S. Cl. 528—194 23 Claims

1. Randomly branched thermoplastic copolyester-carbonate resin containing from about 40 to about 90 mole percent ester bonds exhibiting blow molding properties consisting essentially of the reaction products of:

(i) a carbonate precursor;

(ii) at least one dihydric phenol;

(iii) at least one ester forming reactive derivative of a difunctional carboxylic acid; and

(iv) from about 0.01 to about 2 mole percent, based on the amount of dihydric phenol used, of at least one polyfunctional aromatic branching agent.

4,621,133

PREPARATION OF CURABLE ETHERIFIED AMINOPLAST RESINS AND OF SURFACE COATING RESINS

Harro Petersen, Frankenthal; Günther Immel, Weinheim; Wolfram Weiss, Mutterstadt; Horst Schmidt, Mannheim, and Gerd Busse, Mutterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

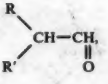
Filed Jul. 5, 1985, Ser. No. 752,067

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1984, 3425131

Int. Cl.[4] C08G *12/28*

U.S. Cl. 528—252 7 Claims

1. A process for the preparation of a curable etherified aminoplast resin based on a urea/aldehyde polycondensate, wherein urea is first reacted with an α,α-dialkylaldehyde of the general formula



where R and R' are identical or different and are each alkyl of 1 to 6 carbon atoms, in a molar ratio (urea/aldehyde) of about 1:2, where as much as 50 mol % of the α,α-dialkylaldehyde may be replaced with formaldehyde, at from 50° to 120° C., under atmospheric or superatmospheric pressure, in the presence of an acid and in the presence or absence of one or more alcohols and/or other organic solvents, and the 2-oxohexahydropyrimidine derivative obtained in this cyclocondensation is then condensed with formaldehyde in the presence of one or more alcohols and of an acid and in the presence or absence of an inert diluent.

4,621,134

AROMATIC POLYTHIOETHERAMIDE

Mitsutoshi Aritomi, and Makoto Terauchi, both of Ibaraki, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

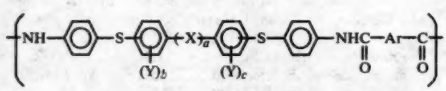
Filed Apr. 8, 1985, Ser. No. 720,688

Claims priority, application Japan, Apr. 25, 1984, 59-83262; Apr. 25, 1984, 59-83263

Int. Cl.[4] C08G *69/42*

U.S. Cl. 528—337 **4 Claims**

1. An aromatic polythioetheramide polymer having a repeating unit represented by the following formula:



wherein X is a divalent hydrocarbon group having from 1 to 10 carbon atoms, —O—, —S—, —SO—, —SO_2—, or —CO—, a is 0 or 1; Y, which Y radicals are the same or different, are selected from the group consisting of an alkyl group having from 1 to 20 carbon atoms, a cycloalkyl group having from 3 to 20 carbon atoms, an aralkyl group having from 6 to 20 carbon atoms, an aryl group having from 6 to 20 carbon atoms, a halogen atom, or a nitro group, b and c, which are the same or different, each is an integer of from 0 to 4, and Ar is an aromatic ring having from 6 to 30 carbon atoms.

4,621,135

NOVEL THF COMPOSITIONS

Nathan Trainin, and Yigal Burstein, both of Rehovot, Israel, assignors to Yeda Research & Development Company, Ltd., Rehovot, Israel

Continuation-in-part of Ser. No. 559,393, Dec. 8, 1983, abandoned, which is a continuation-in-part of Ser. No. 535,539, Sep. 23, 1983, abandoned, which is a continuation of Ser. No. 475,175, Mar. 14, 1983, abandoned, which is a continuation-in-part of Ser. No. 394,571, Jul. 2, 1982, abandoned, which is a continuation of Ser. No. 300,330, Sep. 8, 1981, abandoned, which is a continuation-in-part of Ser. No. 227,299, Jan. 22, 1981, abandoned, which is a continuation-in-part of Ser. No. 153,644, May 27, 1980, abandoned. This application Jun. 6, 1985, Ser. No. 741,753

Int. Cl.[4] A61K *37/00*; C07C *103/52*

U.S. Cl. 530—328 **4 Claims**

1. A material having thymic humoral activity and being selected from the class consisting of peptides having the following amino acid sequences:

Leu-Glu-Asp-Gly-Pro-Lys-Phe-Leu;

His-Pro-Leu-Pro-Asp-Leu-Tyr; and Phe-Val-Leu.

4,621,136

PHENYL AZO CYANOTHIENYL AZO ANILINO DYESTUFFS

Seiichi Imahori; Kiyoshi Himeno, both of Kanagawa, and Shuichi Maeda, Saitama, all of Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

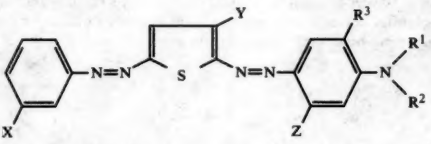
Filed Dec. 23, 1981, Ser. No. 334,005

Claims priority, application Japan, Dec. 26, 1980, 55-189018; Dec. 29, 1980, 55-186675; Jan. 27, 1981, 56-10690; Jan. 27, 1981, 56-10691

Int. Cl.[4] C09B *31/043*; D06P *1/04, 1/18, 3/54*

U.S. Cl. 534—761 **1 Claim**

1. Disazo dyestuff for polyester fibers represented by the following formula:



wherein X represents hydrogen, Y represents cyano, Z represents hydrogen, R^1 represents lower alkyl, cyanoalkyl, hydroxyalkyl, lower alkoxyalkyl, lower alkoxyalkoxyalkyl, aryloxyalkyl, acyloxyalkyl, alkenyloxyalkyl, lower alkoxycarbonylalkyl, lower alkoxyalkoxycarbonylalkyl, or lower alkoxycarbonyloxyalkyl, R^2 represents hydroxyalkyl, lower alkoxyalkyl, lower alkoxyalkoxyalkyl, aryloxyalkyl, acyloxyalkyl, alkenyloxyalkyl, lower alkoxycarbonylalkyl, lower alkoxyalkoxycarbonylalkyl, or lower alkoxycarbonyloxyalkyl, and R^3 represents hydrogen, methyl, chlorine or methoxy, but R^2 represents lower alkyl in case that R^3 represents methyl.

4,621,137

ALPHA-GLYCOSYL GINSENOSIDES

Toshio Miyake; Hiromi Hijiya, both of Okayama; Shinji Suzuki, and Teruo Matsumoto, both of Tokyo, all of Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

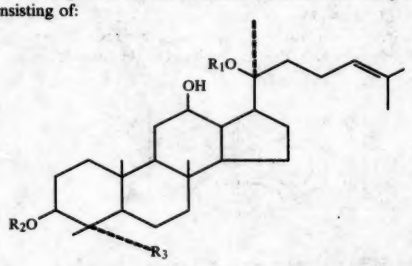
Filed Dec. 16, 1983, Ser. No. 562,221

Claims priority, application Japan, Dec. 24, 1982, 57-225809

Int. Cl.[4] C07H *15/20*; C07J *9/00*

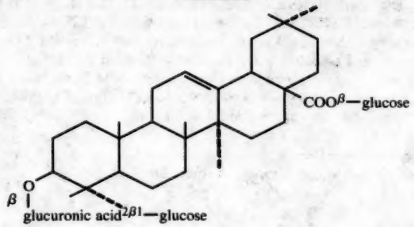
U.S. Cl. 536—5 **4 Claims**

1. A composition of the structure selected from the group consisting of:



and

-continued



wherein:

a. R_1=-βglucose-6β1glucose, R_2=-βglucose-2β1glucose, R_3=H;

b. R_1=-βglucose-6α1arabinopyranose, R_2=-βglucose-6α1-glucose, R_3=H;

c. R_1=-βglucose-6α1arabinofuranose, R_2=-βglucose-2β1glucose, R_3=H;

d. R_1=-βglucose, R_2=-βglucose-2β1glucose, R_3=H;

e. R_1=-βglucose, R_2=H, R_3=-O-βglucose-2α1rhamnose;

f. R_1=R_2=H, R_3=-O-βglucose-2β1glucose;

g. R_1=-βglucose, R_2=H, R_3=-O-βglucose; and

h. R_1=R_2=H, R_3=-O-βglucose-2α1rhamnose.

4,621,138

TRIPHENDIOXAZINE DYESTUFFS

Horst Jäger, Leverkusen; Klaus Langheinrich, Bergisch-Gladbach, and Karl-Josef Herd, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

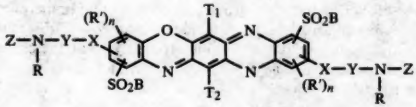
Filed Mar. 28, 1985, Ser. No. 717,058

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1984, 3412729; Oct. 31, 1984, 3439755

Int. Cl.[4] C09B *19/00, 19/02*

U.S. Cl. 544—76 **7 Claims**

1. A dyestuff of the formula



wherein

B=CH=CH_2 or CH_2CH_2W,

wherein

W=detachable group, selected from the group consisting of OSO_3H, Cl, S_2O_3H, $OCOCH_3$, OPO_3H_2 and —$N(CH_3)_3$,

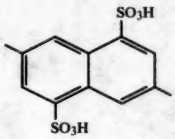
R=H or C_1–C_4-alkyl optionally substituted by OH, OCH_3, COOH or SO_3H,

Z=reactive group or H,

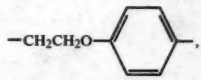
T_1 and T_2 stand for H, Cl, Br, C_1–C_4-alkoxy, C_1–C_4alkyl, optionally substituted phenyl or phenoxy, each optionally substituted by Cl, CH_3, C_2H_5, OCH_3 or OC_2H_5,

X stands for O, S or

Y stands for phenylene optionally substituted by SO_3H, CH_3 or COOH,



, C_1—C_2—alkylphenylene,



,

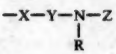
cyclohexylene, in aliphatic hydrocarbon radical optionally substituted by phenyl —SO_3H, COOH, $COCH_3$ or OSO_3H or an aliphatic hydrocarbon radical interrupted by an oxygen or sulfur atom, N—H or $NCOCH_3$ or

X and Y together stand for a direct bond or

,

R' stands for Cl, Br, SO_3H, C_1–C_4-alkyl, C_1–C_4-alkoxy or COOH,

R'' stands for hydrogen or C_1–C_4-alkyl and in the event that Y denotes an optionally substituted divalent aliphatic radical together with R also stands for alkylene, n denotes 0 or 1 and wherein the radical SO_2B is in ortho-position relative to the substituent



4,621,139

PROCESS FOR THE PREPARATION OF N-TETRATHIODIMORPHOLINE

James J. Tazuma, Stow, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 10, 1985, Ser. No. 786,391

Int. Cl.[4] C07D *295/22*

U.S. Cl. 544—85 **10 Claims**

1. A process for the preparation of N-tetrathiodimorpholine which comprises contacting a mixture of morpholine and sulfur at a mole ratio of morpholine to sulfur of from 1:1 to 5:1 with air or oxygen at atmospheric or superatmosphere pressure at a temperature of from 0° C. to 80° C. in the presence of iron salts or iorn complexes.

4,621,140

PROCESS FOR PREPARING 2,6-SUBSTITUTED-9-(1,3-DIHYDROXY-2-PROPOXYMETHYL)-PURINES AND CERTAIN DERIVATIVES

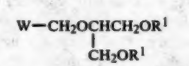
Julien P. H. Verheyden, Los Altos; John C. Martin, Redwood City, and Daniel P. C. McGee, Mountain View, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Feb. 23, 1984, Ser. No. 582,696

Int. Cl.[4] C07D *473/18;* **A61K** *31/52*

U.S. Cl. 544—276 **92 Claims**

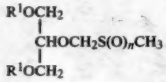
1. A process for preparing a compound of the formula



(VI)

wherein each R^1 is a removable group and W is a protected

guanine, 2-amino-6-chloropurine or 2,6-dichloropurine which comprises reacting a compound of the formula



(III)

wherein R^1 is as defined above and n is 0 or 1 with a protected guanine, 2-amino-6-chloropurine or 2,6-dichloropurine.

4,621,141

ADDITIVES FOR IMPROVING LOW TEMPERATURE CHARACTERISTICS OF FUELS AND METHOD FOR USE THEREOF

Sheldon Chibnik, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

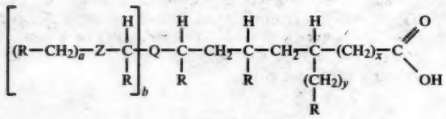
Filed Apr. 26, 1984, Ser. No. 604,189

Int. Cl.[4] C07D *241/04, 239/72;* **A01M** *23/10*

U.S. Cl. 544—358 **4 Claims**

1. A composition prepared by reacting:

(a) a telomeric acid, at least a portion of which has the structural formula



wherein

x=0, if y=2 or

x=2, if y=0

$R=CH_3(CH_2)_n$, where n represents an integer of from 3 to 42;

b=0 or 1, where

if b=0, Q represents a hydrogen atom, and

if b=1, Q represents a CH_2-group, and

a=0 or 1, where;

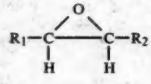
if a=0, Z represents a hydrogen atom, and

if a=1, Z represents a CH_2-group;

(b) an amine selected from the group consisting of pyridine, N,N'-dimethylpiperazine, and amines having the structural formula

where R_1, R_2 and R_3 are hydrocarbon groups of 1 to 20 carbon atoms each; and

(c) an epoxide having the structural formula



where R_1 and R_2 are each hydrogen or a hydrocarbon group having 1 to 22 carbon atoms each in the absence of added water, said reaction being conducted at a molar ratio of about one mole of telomeric acid and about one mole of tertiary amine each to one mole of epoxide, at a temperature between about 70° F. and about 300° F.

4,621,142

PRECURSORS OF BENZO- AND THIENO-FUSED HETEROCYCLIC ANTI-ULCER AGENTS

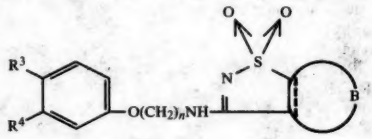
Anthony C. Scotese, King of Prussia; Arthur A. Santilli, Havertown, and Donald P. Strike, St. Davids, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 564,120, Dec. 21, 1983, abandoned. This application Jul. 30, 1985, Ser. No. 760,709

Int. Cl.[4] C07D *495/04*

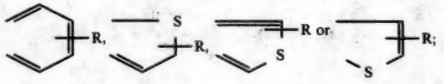
U.S. Cl. 546—198 **5 Claims**

1. A compound having the formula



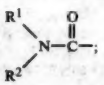
wherein

B is a moiety having the formula



R is mono- or dihalo, nitro, cyano, trifluoromethyl, lower alkyl, lower alkoxy, lowercycloalkyl, mono- or di-lower alkyl substituted amino, lower alkyl thio, loweralkylsulfonyl, sulfamoyl, lower alkyl substituted sulfamoyl, phenyl or phenyl substituted with halo, lower alkyl, lower alkoxy, trifluoromethyl, cyano or nitro;

R^3 and R^4 are, independently, hydrogen or



R^1 and R^2 are each independently hydrogen or lower alkyl; or R^1 and R^2 taken together form a heterocyclic moiety selected from the group 1-pyrrolidinyl, 1-piperidinyl, 1-hexahydroazepinyl, 1-octahydroazocinyl, 3-thiazolidinyl, 4-morpholinyl or 5-thiomorpholinyl, with the proviso that one of R^3 and R^4 is always hydrogen; and

n is 1 to 4.

4,621,143

COCKROACH REPELLANTS

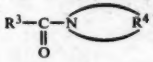
Terrence P. McGovern, Bowie, Md., and George S. Burden, Gainesville, Fla., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jun. 27, 1984, Ser. No. 625,329

Int. Cl.[4] C07C *103/133, 103/158;* **C07D** *295/18*

U.S. Cl. 546—245 **12 Claims**

1. A compound of the formula



wherein R^3 is one of the following groups:

a. branched-chain alkyl having 3 to 5 carbon atoms;

b. branched-chain alkenyl having 3 carbon atoms to thereby form a butenoic radical with the carbonyl group, wherein

there is only one double bond and it is located at the 2 position;

c. straight-chain alkyl having 1 to 3 carbon atoms, one or more of which is substituted with an alicyclic ring moiety which is substituted with lower alkenyl, halogen, or lower alkoxy;

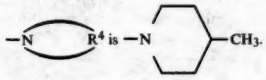
d. an alicyclic ring structure substituted with lower alkenyl, halogen or lower alkoxy;

wherein R^4 is one of the following groups:

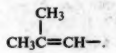
a. C_5 alkylene;

b. lower alkyl substituted C_5 alkylene.

5. The compound of claim **1** wherein R^3 is an alicyclic ring structure, or a branched-chain alkyl or alkenyl, and



6. The compound of claim **5** wherein R^3 is



4,621,144

1-PHENYL-4-HYDROXYPYRAZOLE DERIVATIVES

Yoshiyuki Okada, Suita, and Yasuo Sato, Kyoto, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 511,296, Jul. 6, 1983, Pat. No. 4,474,775, which is a continuation of Ser. No. 304,258, Sep. 14, 1981, abandoned, which is a continuation of Ser. No. 136,460, Mar. 31, 1980, abandoned. This application Jul. 3, 1984, Ser. No. 627,728

Claims priority, application Japan, Mar. 30, 1979, 54-38957

Int. Cl.[4] C07D *231/18*

U.S. Cl. 548—358 **5 Claims**

1. A compound selected from the group consisting of 1-[4-halogenophenyl]-4-hydroxypyrazole, 1-(3-,4- or 3,5-dichlorophenyl)-4-hydroxypyrazole, 1-[4-chloro-2-fluorophenyl]-4-hydroxypyrazole, 1-[3-trifluoromethylphenyl]-4-hydroxypyrazole, and a salt thereof.

4,621,145

PROCESS FOR PREPARING 5-VINYL-2-PYRROLIDINONE AND INTERMEDIATES THEREFOR

Wolfgang Frieben, Willstatt-Sand, and Fritz Gerhart, Kehl-Leutesheim, both of Fed. Rep. of Germany, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Filed Nov. 29, 1983, Ser. No. 556,204

Claims priority, application United Kingdom, Dec. 30, 1982, 8236998

Int. Cl.[4] C07D *207/36*

U.S. Cl. 548—543 **4 Claims**

1. In the pyrolysis of N,N-dimethyl-2-[5'-oxo-2'-pyrrolidine]ethylamine, N-oxide to prepare 5-vinyl-2-pyrrolidinone the improvement wherein an aqueous solution of the pyrolysis distillate is contacted with an acidic ion exchange resin to remove the N,N-dimethyl-2-[5'-oxo-2'-pyrrolidine]ethylamine present as a by product.

3. N,N-Dimethyl-2-[5'-oxo-2'-pyrrolidine]ethylamine or its N-oxide.

4. N,N-dimethyl-2-[5'-oxo-2'-pyrrolidine]ethylamine or its N-oxide in the form of their (S)-enantiomers.

4,621,146

ALKYLTHIOALKYL LACTONES

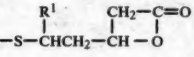
John A. Hyatt, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 20, 1985, Ser. No. 811,222

Int. Cl.[4] C07D *305/12*

U.S. Cl. 549—263 **3 Claims**

1. A compound of the formula



wherein R^1 and R^2 are each selected from H and alkyl of 1–20 carbons.

4,621,147

NOVEL TRIVALENT ORGANOMETALLIC COMPOUNDS AND METHODS OF PREPARING SAME

Orville T. Beachley, Jr., Buffalo, N.Y., assignor to State University of New York, Albany, N.Y.

Filed Nov. 21, 1984, Ser. No. 673,836

Int. Cl.[4] C07F *5/00*

U.S. Cl. 556—1 **7 Claims**

1. A metallo-organic compound of the structure: M $[CH_2C(CH_3)_3]_3$ wherein M is selected from the group consisting of Ga and In.

4,621,148

WATER-SOLUBLE TRIETHANOLAMINE TITANATES

Dieter Barfurth, Troisdorf-Spich, and Heinz Nestler, Troisdorf-Eschmar, both of Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Cologne, Fed. Rep. of Germany

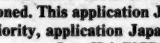
Filed Oct. 9, 1984, Ser. No. 658,488

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1983, 3337099

Int. Cl.[4] C07F *7/28*

U.S. Cl. 556—54 **15 Claims**

1. A water-soluble bis-triethanolamine titanate having one or two glycol ether groups of the formula



wherein A is an ethylene or propylene moiety, R is an alkyl moiety of 1 to 4 carbon atoms, and n can assume values of 1 to 8.

4,621,149

PRODUCTION OF URETHANE COMPOUNDS

Shinsuke Fukuoka, and Masazumi Chono, both of Kurashiki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Japan

Continuation of Ser. No. 451,887, Dec. 21, 1982, abandoned. This application Dec. 10, 1984, Ser. No. 681,061

Claims priority, application Japan, Dec. 25, 1981, 56-213191; Dec. 30, 1981, 56-210640; Jan. 19, 1982, 57-5356; Jan. 19, 1982, 57-5357; Jan. 25, 1982, 57-8840; Jan. 25, 1982, 57-8841; Jan. 28, 1982, 57-10862; Jan. 28, 1982, 57-10863; Jan. 28, 1982, 57-10864; Jan. 28, 1982, 57-10865; Feb. 5, 1982, 57-16442; Feb. 22, 1982, 57-26144; Feb. 22, 1982, 57-26145; Feb. 23, 1982, 57-26750; Feb. 24, 1982, 57-27290; Feb. 24, 1982, 57-28532; Feb. 25, 1982, 57-28106; Feb. 25, 1982, 57-28107; Feb. 25, 1982, 57-29170; Feb. 26, 1982, 57-28874; Feb. 26, 1982, 57-28875; Mar. 1, 1982, 57-30579; Mar. 3, 1982, 57-32213; Mar. 15, 1982, 57-39349; Mar. 15, 1982, 57-39350; Mar. 24, 1982, 57-45667; Mar. 26, 1982, 57-48324

Int. Cl.[4] C07C *125/077, 125/065, 125/067, 125/073, 125/075*

U.S. Cl. 560—24 **41 Claims**

1. A process for producing a urethane compound by oxidative urethanation which comprises reacting at least one compound selected from the group consisting of a primary amine,

a secondary amine and a urea compound with carbon monoxide and an organic hydroxyl compound in a reaction medium free of Lewis Acid redox reactants in the presence of a catalyst system comprising:

(a) at least one member selected from the group consisting of platinum group metals and compounds containing at least one platinum group element, and

(b) at least one halogen-containing compound selected from the group consisting of alkali or alkaline earth metal halides, onium halides in which a halide ion is electrovalently bound to a cation, compounds capable of forming onium halides in the reaction, oxo acids of halogen atoms and their salts, halogen molecules and organic halides in which there is a halogen atom covalently bound to a carbon selected from the group consisting of aliphatic, aromatic, alicyclic, arylaliphatic, heterocyclic and acid halides,

in the presence of molcular oxygen and/or an organic nitro compound as an oxidizing agent at a temperature of from about 80° C. to about 300° C. under a pressure of from about 1 Kg/cm^2 to about 500 Kg/cm^2.

4,621,150

CATALYST AND METHOD FOR ISOMERIZATION

Kenji Hirai; Takamasa Fuchikami, both of Sagamihara; Hiroaki Hirose, Ichihara, all of Japan, and Iwao Ojima, Stony Brook, N.Y., assignors to Sagami Chemical Research Center, Tokyo, Japan

Filed Feb. 21, 1985, Ser. No. 703,617

Claims priority, application Japan, Feb. 24, 1984, 59-32513; Jul. 30, 1984, 59-157594; Sep. 25, 1984, 59-198717

Int. Cl.[4] C07C *69/76*

U.S. Cl. 560—51 **9 Claims**

1. A catalyst for isomerization of a glycidate, a 2-hydroxy-3-butenoate, or an ethylene oxide derivative, consisting essentially of a salt or complex salt represented by the formula:

$$[ML_m]^{n+}[Y]_n^- \quad (I)$$

where M is a metal selected from the group consisting of copper, silver, magnesium, barium, calcium, zinc, cadmium, mercury, iron, cobalt, nickel, rhodium, palladium, iridium and platinum, L is a ligand, Y is a perhalogenoate or a sulfonate, m is 0, 1, 2, 3 or 4 and n is 1, 2 or 3.

4,621,151

OPTICAL RESOLUTION OF DL-CYSTEINE

Hiroyuki Nohira, 51-5 Ohkubo Ryoke, Urawa Saitama-ken, and Keiko Ueda, Chiba, both of Japan, assignors to Hiroyuki Nohira, Urawa, Japan

Filed May 6, 1982, Ser. No. 375,686

Claims priority, application Japan, May 21, 1981, 56-75686

Int. Cl.[4] C07B *57/00*

U.S. Cl. 562—401 **1 Claim**

1. A method of optical resolution of DL-cysteine comprising reacting an optically active mandelic acid with DL-cysteine to form a complex of two diastereomers, resolving the complex by fractional crystallization utilizing the differences in solubilities of the two diastereomers, decomposing either of the two diastereomers by a strong acid to salts of the optically active cysteine and the optically active mandelic acid, removing the optically active mandelic acid, and recovering the optically active cysteine.

4,621,152

PROCESS FOR THE ENANTIOMERIC RESOLUTION OF MIXTURES OF D AND L-6-METHOXY-ALPHA-METHYL-2-NAPHTHALENEACETIC ACID AND RESOLVING AGENT FOR SAID PROCESS

Giuseppe Bernini, Milan, Italy, assignor to Secifarma S.p.A., Italy

Filed Feb. 22, 1984, Ser. No. 582,311

Claims priority, application Italy, Mar. 7, 1983, 19936 A/83

Int. Cl.[4] C07B *57/00*

U.S. Cl. 562—401 **7 Claims**

1. A process for the enantiomeric resolution of D- and L-6-methoxy-α-methyl-2-naphthalene-acetic acid which comprises mixing the enantiomeric mixture with L-threo(+)-2-amino-1-p-nitrophenyl-1,3-propanediol in the presence of a solvent in which the resulting salified enantiomers have different solubilities.

4,621,153

PURIFICATION AND RECOVERY OF AMINO ACIDS

Randolph T. Hatch, Wellesley, Mass., assignor to Biotechnica International, Inc., Cambridge, Mass.

Filed Feb. 27, 1985, Ser. No. 706,041

Int. Cl.[4] C07C *99/12*

U.S. Cl. 562—443 **13 Claims**

1. A method of recovering phenylalanine from an aqueous mixture, said method comprising

providing calcium salt in said mixture yielding Ca^{++} ions in said mixture and

maintaining the pH of said mixture between 8.5 and 11, thereby precipitating a complex comprising phenylalanine and Ca^{++}

separating said precipitated complex from said aqueous mixture,

dissolving said precipitated complex in an aqueous solution at pH below 8.5, and

separating said phenylalanine from said Ca^{++}.

4,621,154

PROCESS FOR PREPARING 4-(4-BIPHENYLYL)-4-OXO-BUTANOIC ACID

Haruhiko Kikuchi, Kamifukuoka, Japan, assignor to Nisshin Flour Milling Co., Ltd. and Nisshin Chemicals Co., Ltd., both of, Japan

Filed Nov. 5, 1984, Ser. No. 668,335

Claims priority, application Japan, Nov. 15, 1983, 58-213403

Int. Cl.[4] C07C *59/86*

U.S. Cl. 562—459 **7 Claims**

1. A process for preparing 4-(4-biphenylyl)-4-oxo-butanoic acid which comprises reacting in chlorobenzene biphenyl with succinic anhydride in the presence of anhydrous aluminum chloride.

4,621,155

PROCESS FOR PREPARATION OF METHACRYLIC ACID

Michio Ueshima, Nishinomiya; Yoshiyuki Takahashi, Suita; Ritsuo Kitada, Takatsuki, and Isao Nagai, Suita, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co. Ltd., Osaka, Japan

Continuation of Ser. No. 513,072, Jul. 12, 1983, which is a division of Ser. No. 275,243, Jun. 19, 1981, Pat. No. 4,419,270. This application Dec. 14, 1984, Ser. No. 681,698

Claims priority, application Japan, Jun. 26, 1980, 55-919; Apr. 16, 1981, 56-238; Apr. 17, 1981, 56-906; Apr. 22, 1981, 56-782; Apr. 24, 1981, 56-405

Int. Cl.[4] C07C *51/235, 51/25, 57/05, 57/055*

U.S. Cl. 562—534 **7 Claims**

1. A process for producing methacrylic acid by the vapor-phase oxidation of a saturated aliphatic aldehyde or unsaturated aliphatic aldehyde having 4 carbon atoms in the presence

of a catalyst comprising molybdovanado-phosphoric acid and being formed by adding a nitrogen containing heterocyclic compound selected from the group consisting of pyridine, piperidine and piperazine to an aqueous solution of molybdovanado-phosphoric acid, optionally adding X and/or Y components to the aqueous solution of molybdovanado-phosphoric acid before, during or after adding thereto the nitrogen-containing heterocyclic compound, to form a precipitate, pelletizing, drying and calcining and having X-ray diffraction lines (Cu-Kα radiation) at 2θ=about 26.2°, about 10.5°, about 21.3° and about 30.3° and a crystal structure approximating that of the salt of molybdovanado-phosphoric acid, and said catalyst having the composition represented by the general formula

$$P_aMo_bV_cX_dY_eO_f$$

wherein the dissociable protons of the molybdovanado-phosphoric acid are omitted, X represents at least one element selected from the group consisting of sodium, potassium, rubidium, cesium, thallium, beryllium, magnesium, calcium, strontium and barium, Y represents at least one element selected from the group consisting of copper, silver, arsenic, antimony, tellurium, cobalt, bismuth and zirconium, and the subscripts a to f represent the atomic proportions of the respective elements, provided that when

b is 12,
a is 0.1–3.0,
c is 0.1–6.0,
d is 0–10.0,
e is 0–5.0 and
f is a value determined by the atomic valences and atomic proportions of the respective elements.

4,621,156

OPTICAL FILTER AGENTS AND PHOTOGRAPHIC PRODUCTS AND PROCESSES CONTAINING SAME

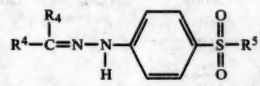
Derek H. R. Barton, Gif-sur-Yvette, France; Irena Y. Bronstein-Bonte, Newton, and Lloyd D. Taylor, Lexington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 89,559, Oct. 29, 1979, Pat. No. 4,298,676. This application Oct. 8, 1981, Ser. No. 309,914

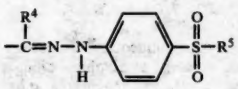
Int. Cl.⁴ C07C *109/12*

U.S. Cl. 564—250 **15 Claims**

1. A pH-sensitive optical filter agent providing light-absorbing capability at a pH above the pKa thereof and being substantially non-light-absorbing at a pH below the pKa thereof, said optical filter agent having the formula:



wherein each R^4 is a cyclic or acyclic hydrocarbon radical or a substituted cyclic or acyclic hydrocarbon radical, or both R^4 groups together complete a cyclic or polycyclic radical, or one or both of R^4 can present a hydrocarbon radical linking together one or more



moieties; and R^5 is a cyclic or acyclic hydrocarbon radical or a substituted cyclic or acyclic hydrocarbon radical.

4,621,157

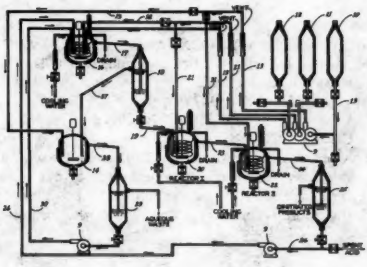
NITRATION PROCESSES

Larry A. McDaniel, Germantown, Tenn., assignor to Jerome A. Gross, St. Louis, Mo., a part interest

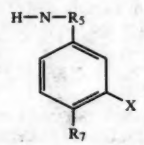
Filed May 7, 1984, Ser. No. 607,794

Int. Cl.⁴ C07C *85/24, 79/10*

U.S. Cl. 564—411 **6 Claims**



1. A continuous process of dinitrating a dinitratable substituted aniline compound which comprises continuously supplying (1) an aqueous nitric acid of about 10–40% HNO_3 by weight and substantially free of sulfuric acid; (2) a substituted aniline compound and (3) a liquid, inert, water-immiscible organic solvent for said aniline compound, in a mole ratio of about 1:1 to about 1:1.3 HNO_3 to said aniline compound, to a reaction zone at a temperature of about 40° to about 70° C. and atmospheric pressure, thereby forming in said zone an emulsion containing a salt of said nitric acid and aniline compound, continuously conveying the overflow emulsion from said zone to a separation zone to allow continuous separation of said emulsion into an aqueous phase and an organic phase containing said salt and solvent, continuously conveying said organic phase to a second and third reaction zone and reacting said salt in the organic phase in said zones with an aqueous nitric acid of 65%–80% by weight HNO_3 and substantially free of sulfuric acid at a temperature of about 40° C. to about 70° C. at atmospheric pressure, in a mole ratio of HNO_3 to salt of about 1.9:1 to about 2.5:1, until the dinitro derivative of said aniline compound is formed and continuously removing said derivative in said organic solvent from the third reaction zone, said substituted aniline compound having the structural formula:



wherein:

R_7 is CH_3, C_2H_5, C_3H_7-n, C_3H_7-i, C_4H_9-i, CF_3 or Cl; X is CH_3, $—CH_2—O—CH_3$ or $—CH(CH_3)O—CH_3$; and R_5 is C_3–C_7 secondary alkyl, or monochloralkyl C_3–C_4.

4,621,158

METHOD FOR MAKING AMINES

Hans-Juergen Hubert, Hamm, and Klaus D. Tillmetz, Olfen-Vinnum, both of Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Bergkamen, Fed. Rep. of Germany

Filed Aug. 21, 1985, Ser. No. 767,823

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1984, 3432015

Int. Cl.⁴ C07C *85/08, 85/02, 85/18, 85/06*

U.S. Cl. 564—473 **8 Claims**

8. A method for making an amine which comprises reacting

a member of the group consisting of alcohols and aldehydes having up to 26 carbon atoms with ammonia or with a primary and/or secondary amine having from 1 to 26 carbon atoms, at an elevated temperature, in the liquid phase, and in the presence of an unsupported catalyst consisting of a combination of copper and tin compounds activated with an organometallic reducing agent.

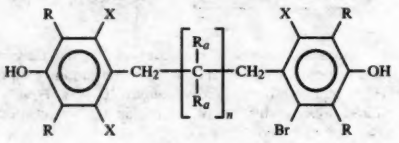
4,621,159

BROMINATED HYDROXYAROMATIC COMPOUNDS

Abel Mendoza, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sep. 9, 1985, Ser. No. 773,685
Int. Cl.⁴ C07C *39/16*
U.S. Cl. 568—726 **20 Claims**

1. A process comprising contacting bromine with a tetraalkyl dihydroxy diaromatic polymethylene-bridged compound in the presence of a reaction medium under reaction conditions such that there is formed a compound of the formula:



wherein n is zero or a positive integer, each X independently is Br or H, each R_a independently is H or alkyl of up to about 12 carbon atoms, and each R independently is a primary or secondary alkyl moiety of up to about 6 carbon atoms.

4,621,160

PROCESS FOR THE CHLORINATION OF AROMATIC DERIVATIVES

Michel Desbois, Rillieux, and Camille Disdier, Lyons, both of France, assignors to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Filed Jun. 22, 1984, Ser. No. 623,466
Claims priority, application France, Jun. 23, 1983, 83 10373
Int. Cl.⁴ C07C *17/12*
U.S. Cl. 570—207 **11 Claims**

1. A process for the chlorination of an aromatic derivative comprising the step of reacting the aromatic derivative with chlorine gas in liquid hydrofluoric acid for a time sufficient to effect chlorination of the aromatic ring of said aromatic derivative, wherein said reaction is carried out in the absence of a catalyst.

4,621,161

OXYGENATE CONVERSION OVER ACTIVATED ZEOLITE CATALYST

David S. Shihabi, Pennington, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 573,776, Jan. 23, 1984, Pat. No. 4,559,314, which is a continuation-in-part of Ser. No. 360,749, Mar. 22, 1982, abandoned. This application Oct. 25, 1985, Ser. No. 791,278
Int. Cl.⁴ C07C *11/20*
U.S. Cl. 585—408 **16 Claims**

1. A process for converting a feedstock comprising alcohol, carbonyl, ether or mixtures thereof to conversion product comprising hydrocarbon compounds which comprises contacting said feedstock at conversion conditions sufficient to convert said feedstock to said product with a catalyst composition prepared by a method which comprises forming a composite of a crystalline zeolite having a silica:alumina mole ratio of at least 100:1 and a Constraint Index from 1 to 12, a binder comprising alumina, and water, and contacting the composite with steam to enhance the activity of the catalyst.

4,621,162

METHOD FOR CONVERSION OF C_3 AND C_4 HYDROCARBONS TO OLEFINIC PRODUCTS

Gary A. Delzer, Bartlesville, and John H. Kolts, Ochelata, both of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 25, 1985, Ser. No. 758,938
Int. Cl.⁴ C07C *4/02*
U.S. Cl. 585—651 **25 Claims**

1. A method for converting feed hydrocarbons comprising at least one of C_3 and C_4 hydrocarbons to less saturated hydrocarbons comprising:

contacting said feed hydrocarbons with a catalyst composition selected from the group consisting of:

(a) a catalyst composition consisting essentially of: about 0.1 to 30 wt. % of each of (1) at least one oxide of at least one element selected from the group consisting of silicon, aluminum and titanium, and (2) at least one oxide of manganese and the balance of (3) at least one oxide of magnesium, and

(b) a catalyst composition consisting essentially of: about 0.1 to 30 wt. % of each of (1) at least one oxide of at least one element selected from the group consisting of silicon, aluminum and titanium, (2) at least one oxide of at least one metal selected from the group consisting of calcium, strontium, barium, tin and antimony, and (3) at least one oxide of manganese, and the balance of (4) at least one oxide of magnesium,

said wt. % being expressed in terms of the element based on the total weight of the catalyst,

under conditions sufficient to convert said feed hydrocarbons to said less saturated product hydrocarbons.

4,621,163

CONVERSION OF C_3 AND C_4 HYDROCARBONS TO LESS SATURATED HYDROCARBONS

John H. Kolts, Ochelata, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 25, 1985, Ser. No. 758,939
Int. Cl.⁴ C07C *4/02*
U.S. Cl. 585—653 **19 Claims**

1. A method for the conversion of feed hydrocarbons comprising at least one of C_3 and C_4 hydrocarbons to C_2 product hydrocarbons, comprising:

contacting said feed hydrocarbons with a contact material, consisting essentially of:

(a) about 0.1 to 30 wt. % of at least one oxide of manganese, and

(b) the balance of at least one oxide of magnesium,

said wt. % being expressed in terms of the element based on the total weight of the contact material,

under conditions sufficient to selectively convert said feed hydrocarbons to said C_2 product hydrocarbons including: a temperature between about 625° C. and about 850° C.

4,621,164

HYDROCARBON PRODUCTION

Martin M. Chang; George T. Tsao, both of West Lafayette, Ind., and Allen W. Anderson, Waterloo, Wis., assignors to Purdue Research Foundation, West Lafayette, Ind.

Continuation of Ser. No. 483,118, Apr. 8, 1983, abandoned, which is a continuation-in-part of Ser. No. 414,784, Sep. 3, 1982, abandoned. This application Jun. 21, 1985, Ser. No. 747,236
Claims priority, application Canada, Dec. 14, 1981, 392210
Int. Cl.⁴ C07C *1/00, 11/20*
U.S. Cl. 585—733 **6 Claims**

1. A process for converting an aqueous ethanolic broth to liquid hydrocarbons predominately of gasoline-boiling range which comprises adjusting the ethanol content of said broth to about 72% by weight and passing said broth in the vapor phase over a zeolite catalyst at a temperature between about 400° and 450° C., an hourly liquid space velocity between about 0.5 and

about 15, and a pressure between about 2 and about 25 atmospheres.

4,621,165

PROCESS FOR REMOVING CERTAIN LINEAR ISOPRENE TRIMERS FROM A MIXTURE OF ISOPRENE TRIMERS

Didier Morel, Lyons, France, assignor to Rhone-Poulenc Sante, Courbevoie, France

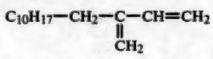
Filed Feb. 23, 1984, Ser. No. 582,908

Claims priority, application France, Feb. 24, 1983, 83 03002

Int. Cl.⁴ C07C 7/00

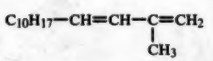
U.S. Cl. 585—866 **14 Claims**

1. A process for removing from a mixture of isoprene trimers essentially comprising cyclic trimers and linear trimers of the formulae:



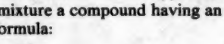
(I)

and



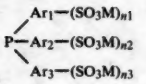
(II)

the said trimer of formula (I), which comprises adding to the said mixture a compound having an activated carbon atom, of the formula:

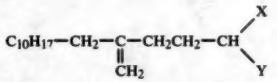


(III)

in which one of X or Y is an electron withdrawing radical of the formulae CHO, COR_1, CO_2R_2, SO_2R_3, $CONR_4R_5$, CN or NO_2 and the other is an electron-withdrawing radical as defined above or an electron-donating radical of the formula $NHCOR_7$, OR_8, OH, $OCOR_9$, SR_{10} or SH or a halogen atom, in which R_1, R_2, R_3, R_4, R_5, R_7, R_8, R_9 and R_{10} are hydrocarbon radicals containing 1 to 12 carbon atoms; in the presence of a catalyst comprising (i) a water-soluble phosphine of the formula:

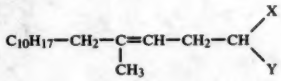


in which Ar_1, Ar_2 and Ar_3, which are identical or different, are phenyl or naphthylene radicals, those radicals being unsubstituted or substituted; M is a cationic radical of mineral or organic origin chosen so that the phosphine is water-soluble, and n1, n2 and n3, which are identical or different, are integers from 0 to 3, at least one of them being greater than or equal to 1; and (ii) at least one rhodium compound, capable of dissolving in water under the reaction conditions by a coordination reaction with the water-soluble phosphine, the amount of rhodium being such as to provide 10^{-4} to 1 gram atoms of elemental rhodium per liter of reaction solution and the amount of said phosphine being such as to provide 0.1 to 200 gram atoms of trivalent phosphorus per gram atom of rhodium, in water or a water-alcohol mixture containing 0%-50% of an aliphatic alcohol containing 1 to 3 carbon atoms and in the presence of a base; causing the linear trimers of formula (I) to react at a temperature of 50° to 200° C. with the compound of formula (III) but leaving the cyclic trimers and linear trimers of formula (II) substantially unaffected and separating from the mixture the products of the formulae:



(IV)

and



(V)

in which X and Y are as defined above.

4,621,166

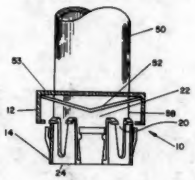
ADJUSTABLE LINE COVERING ELECTRICAL CONNECTOR

Robert J. Neuroth, 36723 N. Kerwin La., Ingleside, Ill. 60041

Filed Aug. 15, 1983, Ser. No. 522,977

Int. Cl.[4] H02G *3/06*

U.S. Cl. 174—65 R 9 Claims



1. An adjustable connector for securing an outer covering of an electrical line to an outlet box having an opening therein for receiving said connector, comprising:

means for providing a body having a first open end and a second open end for insertion into the opening in the outlet box, said means for providing a body being a unitary one piece metal sleeve with said first end having a size larger than the opening in the outlet box and said second end having a size slightly smaller than said opening so that said second end can be inserted into said opening, said means for providing a body having a plurality of first openings at a juncture of said first and second ends and a plurality of second openings in said second end;

means for securing said connector in the opening of the outlet box and contained within said second end of said means for providing a body; and

means for holding the outer covering of the electrical line and contained within the first end of the means for providing a body.

4,621,167

SUBMARINE CABLE ANCHORED TO A REPEATER HOUSING AND METHOD OF ASSEMBLY THEREOF

Ronald C. Oldham, Chandlers Ford, England, assignor to Standard Telephones and Cables Public Limited Company, London, England

Filed Feb. 12, 1985, Ser. No. 700,980

Claims priority, application United Kingdom, Feb. 25, 1984, 8404968

Int. Cl.[4] H02G *15/007, 15/14;* G02B *6/36*

U.S. Cl. 174—70 S 5 Claims

1. A method of securing a terminated submarine cable to a repeater housing, the cable having a joint portion and an adjoining portion, the method comprising: snapping helically-performed high tensile anchor wires onto the joint portion and the adjoining portion, providing a pressure resisting cylindrical collar beneath the ends of the anchor wires at the end of the cable, providing an external repeater housing clamping arrangement, clamping the ends of the preformed anchor wires between the clamping arrangement and the pressure resisting cylindrical collar, and clamping the anchor wires towards the other ends onto the submarine cable.

5. A terminated submarine cable having a joint portion and being secured to a repeater housing, comprising: a plurality of high tensile helically preformed anchor wires tightly embracing and gripping the joint portion and an adjoining portion of the cable, a pressure resisting cylindrical collar beneath the anchor wires at an end of the cable, and an external clamping arrangement secured to the repeater housing and clamping the anchor wires onto the collar, and a further clamping arrangment clamping the anchor wires onto said adjacent portion of the cable.

4,621,168

SUBMARINE CABLE JOINT HOUSING

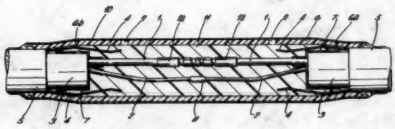
Michael J. Bryant, Chislehurst, and Stephen J. Jones, Orpington, both of England, assignors to Standard Telephones and Cables Public Limited Company, London, England

Filed Feb. 1, 1985, Ser. No. 697,206

Claims priority, application United Kingdom, Feb. 2, 1984, 8402728

Int. Cl.[4] H02G *15/18*

U.S. Cl. 174—88 C 1 Claim



1. A submarine cable joint wherein the cables to be joined each have in their sheaths linear metallic armorings, the joint including a one-piece tubular housing of a filament-wound composite electrically insulating material,

the ends of the housing are internally inwardly tapered and the housing has a central parallel section, said taper being such that the outer ends of the housing are narrower than the cross-section of the central parallel section;

the end of the housing are so dimensioned that the external coverings of the cables to be joined are each a close fit within a respective one of the said ends;

the linear metallic armourings are deformed within the housing, as by splaying,

the housing is filled with a loaded resin material injected into the interior of the housing via at least one filler hole in the central parallel section of the tubular housing; and

the said resin material is chosen for its compatibility with the material of the housing and for its good qualitites of resistance to compressive stress.

4,621,169

ELECTRIC CABLE CONSTRUCTION AND USES THEREFOR

Jean-Claude Petinelli, Dusseldorf, Fed. Rep. of Germany, and Dominique Bertier, Mortain, France, assignors to Compagnie Francaise de Raffinage and Acome, Societies Anonyme, both of Paris, France

PCT No. PCT/FR84/00157, § 371 Date Feb. 21, 1985, § 102(e) Date Feb. 21, 1985, PCT Pub. No. WO85/00245, PCT Pub. Date Jan. 17, 1985

PCT Filed Jun. 21, 1984, Ser. No. 703,806

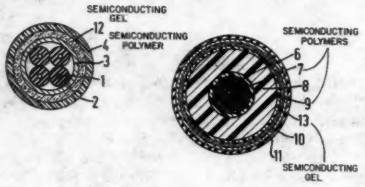
Claims priority, application France, Jun. 21, 1983, 83 10258

Int. Cl.[4] H01B *7/28*

U.S. Cl. 174—106 SC 9 Claims

1. Electric cable comprising at least one cable conductor, at least one metallic shield, at least one semiconducting polymer layer surrounding said cable conductor, and a semiconducting moistureproofing layer in the form of a hydrophobic gel interposed between said metallic shield and said semiconducting polymer layer, both said layers having a resistivity of from under 10 to 100,000 ohm-cm, said semiconducting moistureprofing layer having a dynamic viscosity of less than 100,000 centipoises at 20° C. and between 50,000 and 100,000 at 100° C., said semiconducting moistureproofing layer containing at least 50 to 95 percent by weight of at least one hydrocarbon compound selected from the group consisting of paraffin and naphtha of petroleum, vegetable and synthetic origin, and said

semiconducting moistureproofing layer containing at least 5 to 50 percent by weight of conductive charge selected from the



group consisting of zinc, copper, aluminum, oxides thereof, carbon black and graphite.

4,621,170

MEANS OF TRANSMITTING SIGNALS ALONG A LINE WHILE ALSO PROVIDING A DIRECT VOLTAGE SOURCE

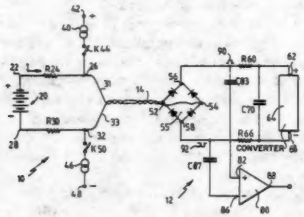
Jean A. Picandet, Paris, France, assignor to Jeumont-Schneider Corporation, Puteux, France

Filed Dec. 21, 1982, Ser. No. 451,945

Claims priority, application France, Dec. 23, 1981, 81 24064

Int. Cl.[4] H04Q *5/18*

U.S. Cl. 370—24 **6 Claims**



2. A communications system of the type which comprises a main station, a local station, a line which connects said main station and said local station and which consists of a single pair of wires for providing direct power supply current to said local station from the main station, at least one current generator connected to said line at one of said stations for introducing digital signal to said line, and at least one detector connected to said line at the other of said stations for detecting digital signals transmitted along the line, characterized in that the current generator comprises means independent of said direct power supply current for generating the introduced digital signals as groups of unipolar current impulses which change the voltage between the wires of the line without substantially reducing the power supply voltage between said wires, said current generator is directly connected to said line, and the detector comprises means for detecting changes in line voltage.

4,621,171

ELECTROACOUSTIC TRANSDUCER AND A METHOD FOR MANUFACTURING THEREOF

Hiroto Wada, Yokosuka, and Minoru Nishizono, Yokohama, both of Japan, assignors to Tokoyo Shibaura Denki Kabushiki Kaisha, Japan

Filed May 31, 1983, Ser. No. 499,555

Claims priority, application Japan, May 29, 1982, 57-92017; May 29, 1982, 57-92018; May 29, 1982, 57-92023

Int. Cl.[4] H04R *19/01, 7/18, 7/26, 19/00*

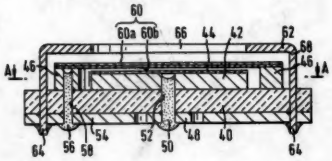
U.S. Cl. 381—113 **7 Claims**

1. An electroacoustic transducer comprising:

a base plate of insulating material;

a stationary electrode secured to on one side of said base plate, said stationary electrode being made of electrically conductive material;

an annular support secured to on the same side of said base plate as said stationary electrode and surrounding said stationary electrode, said annular support being made of the same electrically conductive material as said stationary electrode and extending higher than said stationary electrode from said base plate;



an electrically conductive diaphragm secured on said annular support and facing said stationary electrode; and

an electrically conductive casing mounted on said base plate to house said stationary electrode, said annular support and said diaphragm together, said casing defining an opening facing said diaphragm.

4,621,172

FAST CONVERGENCE METHOD AND SYSTEM FOR ECHO CANCELLER

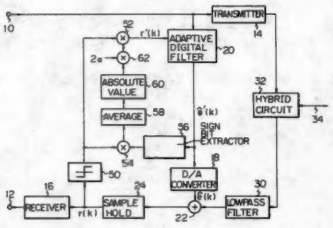
Akira Kanemasa, and Kunihiko Niwa, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Dec. 19, 1983, Ser. No. 562,846

Claims priority, application Japan, Dec. 22, 1982, 57-225167; Jul. 11, 1983, 58-125814

Int. Cl.[4] H04B *3/20*

U.S. Cl. 370—32.1 **3 Claims**



2. A fast convergence system for echo cancellation comprising a:

means for generating an echo replica in response to a transmit signal;

means for producing a difference signal by subtracting the echo replica from a signal which contains a received signal and an echo;

means for multiplying a polarity of the difference signal and a polarity of the echo replica to produce a multiplied output;

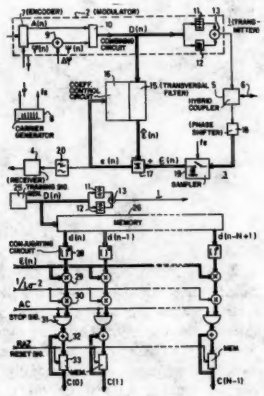
means for averaging the multiplied output to produce and averaged output; and

means for adaptively varying a tap correction amount of a filter of the echo cancellation system, in accordance with an absolute value of the averaged output.

4,621,173
METHOD OF REDUCING THE CONVERGENCE TIME OF AN ECHO CANCELLER AND APPARATUS FOR CARRYING OUT SAID METHOD

Loic B. Y. Guidoux, Garancieres, France, assignor to Telecommunications Radioelectriques et Telephoniques T.R.T., Paris, France

Filed Jun. 14, 1983, Ser. No. 504,200
Claims priority, application France, Jun. 14, 1982, 82 10310
Int. Cl.[4] H04B 3/20
U.S. Cl. 370—32.1 **17 Claims**



1. A method of reducing the convergence time of an echo canceller connected in a transceiver arrangement between one-way transmit and receive paths coupled to a two-way path and used to cancel an echo signal occurring in the receive path of the transceiver in response to a signal supplied to the transmit path thereof, said echo canceller comprising a transversal filter having a number N of controllable coefficients for producing an output signal derived from the signal supplied to the transmit path, and a difference circuit for producing a signal ε(n) corresponding to the difference between two signals which are formed from the signal in the receive path of the transceiver and the output signal of the transversal filter, respectively; said method comprising at least the following steps:

transmitting in the transmit path of the transceiver a training data signal D(n) constituted by complex datums transmitted at instants nT, T being the datum period and n being an integer, such signal D(n) being periodically reproduced with a period LT where L is an integer such that LT is at least equal to NT, and having the property:

$$\sum_{n=0}^{L-1} d(n) \cdot d^{x}((n-i) \text{ modulo } L) = 0 \text{ for } i \neq 0 \text{ and } 1 \leqq i \leqq N-1$$

where d and d^x are the complex value of a datum of the signal D(n) and its complex conjugate value, respectively;

storing in the transversal filter the values of the N datums of the signal D(n) transmitted during each period LT thereof; and

calculating the coefficients of the transversal filter after the instant of appearance of an echo signal ε(n) occurring in the receive path of the transceiver in response to said transmitted training data signal in the transmit path in accordance with the expression:

$$\vec{C} = \vec{C}_o + \frac{1}{L\sigma^2} \sum_{n=0}^{L-1} \epsilon(n) \cdot \vec{D}^{*}(n)$$

where C_o and C are the vectors of the N coefficients of the transversal filter at the beginning and at the end of such calculation, respectively,

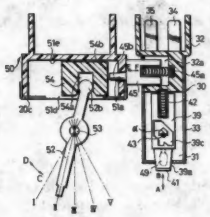
ε(n) is the difference signal,

$D^x(n)$ is the vector of the complex conjugate values of the N datums of the signal D(n) stored in the transversal filter, and σ^2 is a constant term representative of the power of each of the transmitted datums.

4,621,174
COMPOSITE SWITCH

Shiro Kondo, and Kenji Sawada, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Apr. 24, 1985, Ser. No. 726,629
Claims priority, application Japan, Apr. 24, 1984, 59-60545[U]
Int. Cl.[4] H01H 9/00
U.S. Cl. 200—5 R **4 Claims**



1. A composite switch comprising

a main switch whose contacts are connected and disconnected by actuation of an operation member, and

a change-over switch whose contact is changed among plural positions,

an auxiliary switch provided electrically in series with the contacts of said main switch to form a series circuit,

a display mechanism electrically coupled to said series circuit for indicating when both said main switch and said auxiliary switch are closed, and

a switching member for switching said auxiliary switch positioned so that it is driven by a working member for operating the contact of said change-over switch such that the auxiliary switch is opened when the working member is moved to an off position.

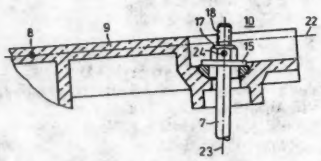
4,621,175
DRIVE FOR A VACUUM SWITCH

Ralf R. Volkmar, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

PCT No. PCT/DE84/00163, § 371 Date Mar. 28, 1985, § 102(e) Date Mar. 28, 1985, PCT Pub. No. WO85/00691, PCT Pub. Date Feb. 14, 1985
PCT Filed Jul. 31, 1984, Ser. No. 720,410
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1983, 3328183
Int. Cl.[4] H01H 33/66, 3/46
U.S. Cl. 200—335 **4 Claims**

4. A device for a vacuum switch having joint means disposed between a movable contact bolt and a drive lever for operating the contact bolt, said joint means provided for the transmission of operating force to a switching tube, said joint means comprising a spherical segment and a spherically-shaped joint socket for receiving said segment, said segment and said socket being provided with centered holes for the passage of the movable contact bolt of the switching tube, the center of the spherical segment being disposed offset in the direction of the switching tube from a center line of the drive lever extending in the "on" position at right angles to an axis of the movable contact bolt, the distance of the center of the

spherical segment from the center line of the drive lever corresponding approximately to one-half of the stroke of the movable contact bolt when switching between on and off, said switching tube comprising a stationary contact bolt, said stationary contact bolt having an internal thread accessible at an



end face thereof and being provided laterally with at least one flat spot and being fastened by screw means engaging the internal thread to a stationary connecting means between ribs provided in said connecting means, whereby said switching tube is secured in a rigid manner against rotation.

4,621,176

METHOD OF AND DEVICE FOR MONITORING AND/OR CONTROLLING WELDING CURRENT IN THE HIGH-FREQUENCY RESISTANCE PRESSURE WELDING OF PIPES WITH LONGITUDINAL SEAMS

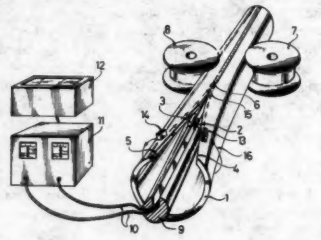
Wilfried Kliesch, Iserlohn; Friedrich O. Koch, Unna-Massen; Hans J. Wahl, Münster; Rolf Krebs, Hamm; Peter Schorr, Münster, and Heinz Straüch, Hagen-Emst, all of Fed. Rep. of Germany, assignors to Hoesch Werke Aktiengesellschaft, Dortmund, Fed. Rep. of Germany

Continuation of Ser. No. 542,367, Oct. 17, 1983, abandoned. This application Oct. 18, 1985, Ser. No. 788,514

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1982, 3238766

Int. Cl.[4] B23K *11/08*

U.S. Cl. 219—8.5 **13 Claims**



11. Apparatus for monitoring and controlling welding current in high-frequency resistance pressure welding of pipes with longitudinal seams, comprising: a high-frequency welding generator, current-transmission means, and a welding-current setter, two sensors for detecting magnetic fields generated by welding current and converting detected magnetic fields into a voltage being inside the pipe immediately in front of the welding point and below edges of the skelp; means for monitoring oscillations in the voltage and comparing with reference voltages serving as reference for width of oscillation; a voltage measuring device connected to said sensors and containing integrated limiting-value generators; and a reference-to-actual value comparator with means for shaping a setting signal to correct the welding current when said reference voltages are exceeded, said comparator being wired into controls connected to said welding-current setter each of said sensors being separately located below one edge of the skelp for inducing a voltage thereinto and having a coil with a coil axis transverse to a pipe axis, voltage in the coil of one sensor being measured independently of voltage in the coil of the other sensor.

4,621,177

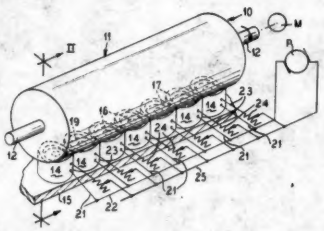
INDUCTOR CONFIGURATION FOR EDDY CURRENT HEATING IN THE PAPERMAKING PROCESS

Jeffrey H. Pulkowski, Beloit, Wis., and Steven J. Siler, Rockton, Ill., assignors to Beloit Corporation, Beloit, Wis.

Filed Mar. 27, 1985, Ser. No. 716,535

Int. Cl.[4] H05B *6/40*

U.S. Cl. 219—10.49 A **10 Claims**



1. In a machine for treating material moving therethrough in a machine direction having a cylindrical roll of magnetic flux conducting material, the improvement of an induction heater for said roll which comprises a core having a center leg, an outer leg completely surrounding and radially spaced from said center leg and a connecting leg at the end of the center and outer legs remote from the roll, an exciting coil wrapped around the center leg filling the space between the inner and outer legs and having ends adapted to be connected to a power source, said center and outer legs having free inboard end faces confronting the roll and contoured cooperatively with the surface of said roll to provide a desired heat input pattern to the roll, said free inboard end faces being concave in the machine direction of the roll and convex in the cross machine direction of the roll such that said faces partially surround an arc of the circumference of said roll to provide the desired heat input pattern to the roll.

4,621,178

MICROWAVE OVEN HAVING A KEYBOARD OF THE MEMBRANE TYPE

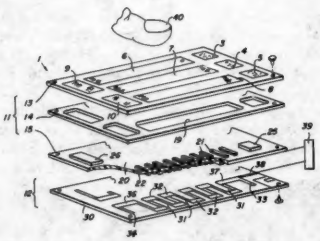
Toshimichi Taguchi, and Hideyuki Akao, both of Osaka, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 347,972, Feb. 11, 1982, Pat. No. 4,575,601. This application Sep. 30, 1985, Ser. No. 781,978

Claims priority, application Japan, Feb. 19, 1981, 56-25280

Int. Cl.[4] H05B *6/68;* **G06F** *3/02*

U.S. Cl. 219—10.55 B **1 Claim**



1. A microwave oven apparatus comprising:

actuator means including a generally flat plate having first

and second major surface and having a plurality of elongated actuator sections thereof, each of said plurality of elongated actuator sections being adapted to permit actuation of a plurality of switches distributed along its length, said actuator means having first electrode means on said second major surface;

substrate means having a first major surface thereon, said first major surface being disposed in juxtaposition to said second major surface of said actuator means and being coextensive therewith over at least one of said elongated actuator sections, said substrate means having a plurality of electrically interconnected second discrete electrodes on its first major surface disposed so as to be facing and spaced away from said first electrode means and capable of establishing electrical contact with a selected portion of said first electrode means upon deformation of said actuator means at its respective switch location along one of said elongated actuator sections, said second major surface of said actuator means having a layer of electrically conductive material disposed thereon and a layer of pressure-sensitive material interposed between the layer of electrically conductive material and the substrate;

resistor means connected between said second electrodes;

each of said plurality of elongated actuator sections being flexibly actuatable to reduce the spacing between said first electrode means and said plurality of second electrodes thereby reducing the electrical resistance between said actuator means and said substrate means at one of said switch locations;

means for sensing discrete resistance values of said resistor means as a function of the respective switch location where said first electrode means is brought into electrical contact with a respective second electrode;

means for controlling microwave heating time in said microwave oven in response to a discrete resistance sensed by a first of said plurality of elongated actuator sections;

means for controlling grill heating time in said microwave oven in response to a discrete resistance sensed by a second of said plurality of elongated actuator sections; and

means for controlling oven heating temperature in said microwave oven in response to a discrete resistance sensed by a third of said plurality of elongated actuator sections.

4,621,179

MICROWAVE HEATING APPARATUS

Shigeru Kusunoki, and Tomotaka Nobue, both of Nara, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

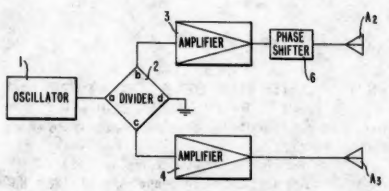
PCT No. PCT/JP82/00297, § 371 Date Mar. 29, 1983, § 102(e) Date Mar. 29, 1983, PCT Pub. No. WO83/00595, PCT Pub. Date Feb. 17, 1983

PCT Filed Jul. 30, 1982, Ser. No. 486,283

Claims priority, application Japan, Aug. 7, 1981, 56-124332

Int. Cl.⁴ H05B *6/64*

U.S. Cl. 219—10.55 A **4 Claims**



1. A microwave heating apparatus using a semiconductor microwave generator wherein the output from a single semiconductor oscillator is branched by a power distributor, and the branched power parts are respectively individually amplified by respective semiconductor amplifiers, the amplified power parts being fed into a heating chamber by two antennas provided on a single wall surface of the heating chamber via a phase shifting means such that they are 180° out of phase with each other.

4,621,180

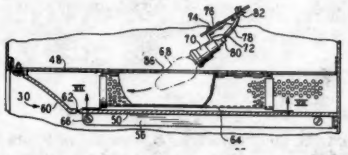
CAVITY ILLUMINATION MEANS FOR MICROWAVE OVEN

Mark J. Kristof, Marion Township, Marion County, and Donald J. Spencer, Pleasant Township, Franklin County, both of Ohio, assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jul. 8, 1985, Ser. No. 752,817

Int. Cl.⁴ H05B *6/64*; F21V *33/00*

U.S. Cl. 219—10.55 R **7 Claims**



1. In a microwave oven having a cooking cavity defined by cavity walls into which microwave energy is selectively introduced, cavity illumination means comprising:

an illuminating light bulb;

an opening in one of said cavity walls;

a mounting plate carrying a light bulb socket on one side thereof;

said opening being sufficiently large to receive said light bulb and light bulb socket therethrough from the outside thereof, but being smaller than said mounting plate, such that said mounting plate will be held on the outside of said cavity wall; and

means shielding said light bulb from microwave energy within said cavity;

said shielding means having an opening therein sufficiently large to permit manual access to said light bulb from the interior of said cavity;

whereby, said light bulb is carried on said mounting plate by means of said socket and can be assembled to said cavity from the exterior of said cavity through said opening and said light bulb is readily accessible from the interior of said cavity for replacement purposes.

4,621,181

METHOD OF MANUFACTURING MULTILAYER SCREW SEAM PIPES AND DEVICE FOR CARRYING OUT THE METHOD

Horst Lachmitz, Unna, Fed. Rep. of Germany, assignor to Hoesch AG, Fed. Rep. of Germany

Filed Aug. 10, 1984, Ser. No. 639,326

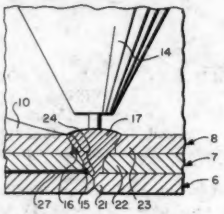
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1983, 3331144

Int. Cl.⁴ B23K *31/06, 9/02*

U.S. Cl. 219—62 **3 Claims**

1. In a method of manufacturing multilayer helical seam pipes in a deformation station from several elongated strips forming upper middle and lower strip edges lying loosely over each other individually unrolled and straightened, wherein the strip edges are conjointly worked to a width and coordinated with each other, and which are fed to a deformation station at an angle of entry which corresponds to the particular pipe diameter and then welded together to a pipe string, the improvement which avoids porous welding seams, comprising feeding the strips to a deformation station at an angle of entry corresponding to the pipe diameter, arc welding separate

seams at interfaces of the upper and middle strip edges, and the middle and lower strip edges with several arc welding heads,



and arc welding a seam over welded interface points with another arc welding head to connect adjacent strips.

4,621,182

SMALL DIAMETER RADIANT TUBE HEATER

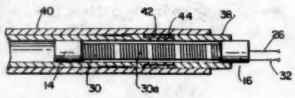
John M. Driggers, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 571,214, Jan. 16, 1984, Pat. No. 4,572,938. This application Apr. 22, 1985, Ser. No. 725,688

The portion of the term of this patent subsequent to Feb. 25, 2003, has been disclaimed.

Int. Cl.[4] B23K *1/04, 3/00*

U.S. Cl. 219—85 BM **8 Claims**



1. A process for local high temperature heating of the tubular member having an axially-extending bore comprising

inserting in said bore at the location where the high temperature heating is desired an electrical resistance heated radiant heating unit comprising: an insulating, refractory, generally cylindrical elongate mandrel that is formed with a lengthwise-extending bore and with enlarged diameter shoulder means at each of its ends respectively, and formed with helical recesses in its surface intermediate said shoulder means,

a bare platinum-rhodium alloy wire disposed in said helical recesses and wound in the form of a generally helical coil having groups of windings in which the adjacent windings within each group of windings are substantially uniformly spaced from each other and said groups of windings are also spaced from each other lengthwise of said mandrel for providing electrical resistance heating,

a pair of bare electrical lead members operatively connected to opposite ends of said wire respectively and electrically insulated from each other by interposed parts of said mandrel,

one of said lead members being disposed in and extending through said bore,

each of said shoulder means being formed with an aperture for the passage therethrough of one of said lead members, respectively, and

each of said lead members extending through one of said apertures respectively, for electrical connection to the opposite ends of said wire, respectively, and then

energizing said unit.

4,621,183

POWDER SURFACE WELDING METHOD

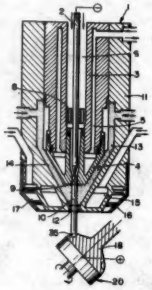
Yukou Takeuchi, and Masaru Nagata, both of Nagoya, Japan, assignors to Daido Tokushuko Kabushiki Kaisha, Nagoyo, Japan

Filed Oct. 23, 1984, Ser. No. 663,929

Claims priority, application Japan, Oct. 26, 1983, 58-200576; Oct. 28, 1983, 58-201052

Int. Cl.[4] B23K *15/00*

U.S. Cl. 219—121 PL **16 Claims**



1. A method for surfacing an engine valve with a surfacing powder by means of a plasma torch comprising supplying a plasma working gas from a space between a bar electrode and an inner tube surrounding the bar electrode and supplying a surfacing powder from a space between the inner tube and an outer tube surrounding the inner tube to a jetting nozzle to form a plasma arc while rotating the engine valve, wherein said surfacing powder contains not less than 95 percent of powder having a particle size of −60 mesh to +250 mesh, and the surfacing is carried out at a relative surfacing speed of not less than 3.8 mm/sec. and wherein a distance L (mm) between the end of said plasma arc jetting nozzle and said engine valve is within a range of

$$9.5Ds+6 \leqq L \leqq Ds+8$$

(wherein Ds is an opening diameter (mm) of the plasma arc jetting nozzle) and an offset angle (θ) of the axial center of said plasma torch with respect to the rotational center of said engine valve is within a range of

$$7° \leqq \theta \leqq 20°$$

at a delay angle side.

4,621,184

OPTICAL MONITORING DEVICE FOR DETERMINING FAULTS IN A PLASMA BURNER

Oldrich Vancata, Skultuna, Sweden, assignor to Asea Aktiebolag, Sweden

Filed Nov. 1, 1984, Ser. No. 667,454

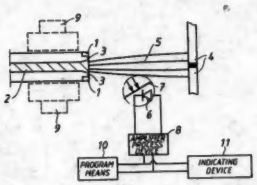
Claims priority, application Sweden, Nov. 14, 1983, 8306249

Int. Cl.[4] B23K *15/00*

U.S. Cl. 219—121 PY **1 Claim**

1. A method of detecting the presence of contamination materials in a plasma arc produced by a plasma burner which comprises monitoring the spectral output from the plasma arc of the burner for the characteristic spectral response of at least

one contaminating element whose concentration in the arc is expected to increase when faulty operation of the burner oc-



curs and generating a signal output with the presence of said at least one contaminating element in said arc.

4,621,185

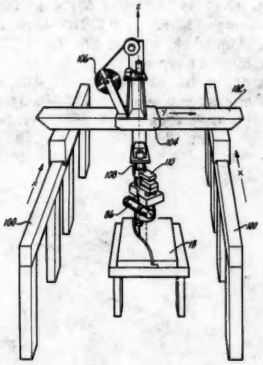
ADAPTIVE WELDING APPARATUS HAVING FILL CONTROL CORRECTION FOR CURVILINEAR WELD GROOVES

Ronald D. Brown, Mapleton, Ill., assignor to Caterpillar, Inc., Peoria, Ill.

Continuation of Ser. No. 705,151, Feb. 25, 1985, abandoned. This application Dec. 2, 1985, Ser. No. 803,518

Int. Cl.[4] B23K *9/12*

U.S. Cl. 219—124.34 **9 Claims**



1. A welding apparatus for guiding a welding torch along a weld groove, scanning a sensor along a preselected pathway extending across said weld groove at a preselected distance from said welding torch, and adaptively controlling at least one of a weld voltage, wire feed speed, and welding torch travel speed in response to the scanned weld groove cross sectional area, comprising:

first means for delivering first signals in response to the position and configuration of the weld groove cross section;

second means for receiving said first signals, calculating the weld groove cross sectional area, and delivering a second signal in response to the magnitude of said calculated area;

means for calculating a series of guidance points along said weld groove;

third means for receiving said second signal, calculating the magnitude of a first angle formed by the intersection of a preselected reference line and a first line extending through a current guidance point and a previous guidance point, calculating the magnitude of a second angle formed by the intersection of said preselected reference line and a second line extending through the current guidance point and the current welding torch location, calculating a general angular deviation from the difference between said first and second angles, altering said second signal in response to the magnitude of said angular deviation, and delivering a resulting third signal; and

fourth means for receiving said third signal and controlling the volume of weld material deposited in said weld groove in response to said third signal.

4,621,186

THERMALLY-SENSITIVE CONTROL ARRANGEMENT FOR CONTAINERS PROVIDED WITH ELECTRIC IMMERSION HEATERS

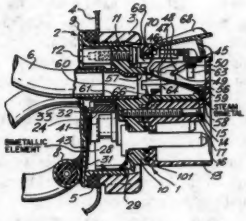
John C. Taylor, Ballasalla, and Phillip G. Binns, Port Erin, both of Isle of Man, assignors to Strix Limited, United Kingdom

Filed Dec. 14, 1982, Ser. No. 449,810

Claims priority, application United Kingdom, Dec. 16, 1981, 8137993

Int. Cl.[4] H05B *1/02, 3/82;* **A47J** *27/62;* **H01H** *37/54*

U.S. Cl. 219—330 **43 Claims**



1. A thermally-sensitive electrical control for an electric immersion heater for containers, the immersion heater having a heating element carried by a head adapted to be secured in a watertight manner in or adjacent an opening in a container wall, the heating element terminating in cold leads by means of which electrical connections are made to the heater, said control being adapted to be mounted on the head of an immersion heater and having an outer periphery of less radial extent than a peripheral portion of the head so as to be passable through the opening in a wall of a container whereby the head may be positioned in or adjacent the opening with the control mounted thereon by insertion of the control through the opening from inside the container, said control comprising:

(a) a body portion having a generally axial plane which includes a longitudinal axis of the body portion, the longitudinal axis extending generally perpendicular to the plane of the opening;

(b) electrical switch means mounted to the body portion adapted to interrupt the power supplied to the heating elements;

(c) first and second thermally responsive actuating means connected to the electrical switch means for operation thereof upon the element overheating and upon liquid within the container boiling, at least the second actuating means being mounted on the control and acting on the electrical switch means through an over-centre spring mechanism and being adapted to be exposed in use to steam or vapour resulting from liquid within the container boiling;

(d) means shielding the electrical switch means from such steam or vapour; and,

(e) terminal pins mounted on the body portion having free end portions adapted to be engaged by a separate socket connector for connecting the heating element via said electrical switch means to a source of electrical power, said electrical switch means and said first actuating means being disposed on a first side of the body portion, which first side faces the head of a heater when mounted thereto, said over-centre spring mechanism and said second actuating means being mounted to a second, opposite side of the

body portion and being disposed on one side of said generally axial plane, the free end portions of the terminal pins being disposed on the opposite side of said generally axial plane generally opposite said over-centre spring mechanism and said second actuating means.

42. A container comprising:

(a) an electric immersion heater having a heating element carried by a head adapted to be secured in a watertight manner adjacent an opening in a container wall, the heating element terminating in cold leads by means of which electrical connections are made to the heater; and

(b) a thermally sensitive electrical control being mounted on the head of the immersion heater and hving an outer periphery of less radial extent than a peripheral portion of the head so as to be passable through the opening in a wall of the a container whereby the head may be positioned adjacent the opening with the control mounted thereon by insertion of the control through the opening from inside the container, in said control comprising: (i) a body portion having a generally axial plane which includes a longitudinal axis of the body portion, the longitudinal axis extending generally perpendicular to the plane of the opening; (ii) electrical switch means mounted to the body portion and adapted to interrupt power supplied to the heating element; (iii) first and second thermally responsive actuating means connected to said electrical switch means for operation thereof, upon the element overheating and upon liquid within the container boiling, at least said second thermally responsive actuating means being mounted on the control and acting on said switch means through an over-centre spring mechanism and being exposed in use to steam or vapour resulting from liquid within the container boiling; (iv) means shielding the electrical switch means from such steam or vapour; and, (v) terminal pins mounted on the body portion having free end portions adapted to be engaged by a separate socket connector for connecting the element via said electrical switch means to a source of electrical power, said electrical switch means and said first thermally responsive actuating means being disposed on a first side of the body portion which first faces the head of a heater when mounted thereto, said, over-centre spring mechanism and said second actuating means being mounted to a second opposite side of a body portion and being respectively disposed to one side of said generally axial plane the free end portions of the terminal pins being disposed to the other side of said generally axial plane generally opposite said over-centre spring mechanism and said second actuating means.

4,621,187

PAINT SPRAYING AND CURING BOOTH

William A. Petro, Jr., 1770 Workman St., Los Angeles, Calif. 90031

Filed Feb. 1, 1985, Ser. No. 697,252
Int. Cl.[4] H05B *3/44*; F26B *3/30*; B05B *12/02*
U.S. Cl. 219—358 **21 Claims**

1. A combined painting and curing booth comprising:

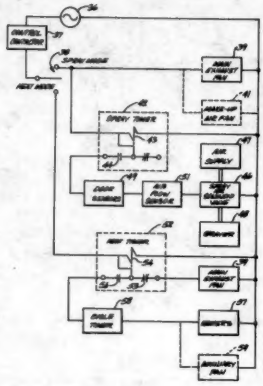
a sheet metal enclosure for accommodating a vehicle to be painted;

means for introducing clean air into one portion of the enclosure;

means for withdrawing air from another portion of the enclosure;

means for supplying pressurized air inside the enclosure for spray painting;

a plurality of quartz tube radiant heater assemblies mounted in the sheet metal walls of the enclosure, each of the heater assemblies being mounted primarily external to the walls so that no substantial portion of the heater assembly extends into the enclosure; and



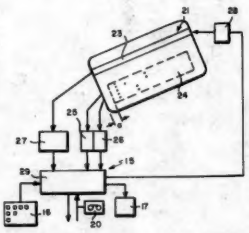
means for preventing simultaneous enabling of the air supply means and the heaters.

4,621,188

DATA CARD AND DATA STRIP MEASURING MEANS

Hermann Stockburger, Kirnachweg 7, D-7742 St. Georgen, and Hans-Georg Winderlich, Niedere Str. 36, D-7730 Villingen, both of Fed. Rep. of Germany

Continuation of Ser. No. 539,186, Oct. 5, 1983, abandoned, which is a continuation of Ser. No. 232,040, Jan. 30, 1981, abandoned. This application Feb. 1, 1985, Ser. No. 697,425
Int. Cl.[4] G06K *19/00*
U.S. Cl. 235—382 **3 Claims**



1. A system comprising an authorization card having track of magnetizable material having information stored therein, a strip having information allocated to the card, said strip being shorter than the card length and said strip having an edge a distance a away from an edge of the card, means for measuring the distance a of said edge of said strip away fom the edge of the card, and means for reading the information content of said strip and said track.

4,621,189

HAND HELD DATA ENTRY APPARATUS

Rajendra Kumar, and Robert F. Meyerson, both of Akron, Ohio, assignors to Telxon Corporation, Akron, Ohio

Filed Oct. 8, 1985, Ser. No. 785,604
Int. Cl.[4] G06K *7/10*
U.S. Cl. 235—472 **17 Claims**

1. A hand held data entry apparatus comprising:

hand held main body portion for receiving, storing and

transmitting information, said main body portion having a major axis;

scanning head including an optical scanning means; and

means for electrically and mechanically connecting said scanning head to said main body portion, said means including an electrical connector having first and second mating contact portions, each including a plurality of contacts, said first mating portion being a part of said main body portion and said second mating portion being a part of said scanning head, said plurality of contacts in at least

one of said mating contact portions being connected such that the same electrical connections are made between said first and second mating contact portions irrespective of the orientation of said mating contact portions with respect to each other when they are engaged, said optical scanning means facing in a direction which is at predetermined angle to the major axis of said main body portion, whereby the direction in which the scanning head faces may be oriented with respect to the main body portion to suit the convenience of the user.

4,621,190

CARD WITH AN IC MODULE

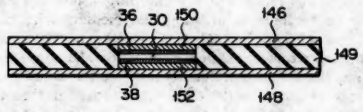
Tamio Saito; Hiroshi Kobayashi, both of Tokyo, and Shigekazu Hori, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 7, 1984, Ser. No. 618,381

Claims priority, application Japan, Jun. 9, 1983, 58-103346

Int. Cl.[4] G06K *19/06*

U.S. Cl. 235—492 **19 Claims**



1. A card comprising:

an insulation substrate;

an IC module which is formed in said insulation substrate and has data processing means for generating an output signal in accordance with an input signal; and

first and second conductive layers which are respectively formed on the substantially entire upper and bottom surfaces of said insulation substrate in contact with said IC module, and between which a drive power and input and output signals of said IC module are supplied.

4,621,191

SELF-SCANNING TYPE PHOTOELECTRIC CONVERSION ELEMENT DRIVE DEVICE RESPONSIVE TO DIFFERENT DETECTED LIGHT INTENSITIES FOR FOCUS DETECTION

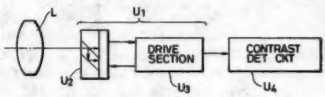
Koji Suzuki; Masahiro Kawasaki, and Harumi Aoki, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

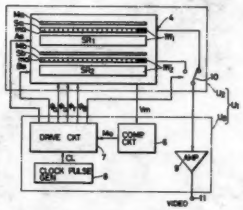
Filed Feb. 24, 1984, Ser. No. 583,533

Claims priority, application Japan, Feb. 24, 1983, 58-28614

Int. Cl.[4] G03B *3/10, 7/08*

U.S. Cl. 250—201 **6 Claims**





1. A focus detecting device comprising:

first and second photoelectric conversion element arrays, each of the said arrays including a plurality of photoelectric elements arranged at positions corresponding to predetermined positions in a received image;

light intensity detecting means for detecting an intensity of light in said image; and

means for scanning said first and second arrays to read out charges from said photoelectric elements, said scanning means operating in response to an output of said light intensity detecting means for scanning said first and second arrays in series when a light intensity sensed by said light intensity detecting means is below a predetermined value and scanning said arrays in parallel when said sensed intensity is above said predetermined value.

4,621,192

DEVICE FOR MEASURING THE GRADIENT OF A MAGNETIC FIELD BY THE MAGNETOOPTICAL EFFECT

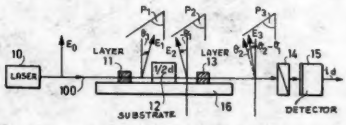
Francois Duthoit, Brest, and Bernard Desormiere, Plougonvelin Le Conquet, both of France, assignors to Thomson-CSF, Paris, France

Filed Oct. 1, 1984, Ser. No. 656,329

Claims priority, application France, Oct. 4, 1983, 83 15791

Int. Cl.[4] G02F *1/01*

U.S. Cl. 250—225 **6 Claims**



1. A device for measuring the gradient of a magnetic field by

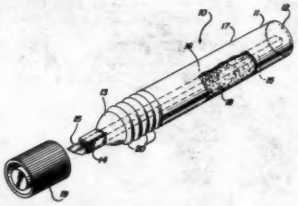
the magnetooptical effect and which comprises a source supplying a light beam linearly polarized in one propagation direction, a first magnetooptical medium immersed in the magnetic field, receiving the light beam and rotating its polarization plane, a half-wave plate having a neutral axis parallel to the polarization of the beam emitted by the source and receiving the beam transmitted by the first medium, a second magnetooptical medium immersed in the magnetic field, receiving the light beam transmitted by the half-wave plate, making its polarization plane rotate and supplying a light beam, whereof the angle of the polarization plane relative to the polarization plane of the beam emitted by the source is proportional to the component of the gradient of the magnetic field between the two media in the propagation direction of the light beam.

4,621,193

FLUORESCENT PENETRANT CRACK DETECTION

Michael Van Hoye, 5564 Vista del Rio, Anaheim, Calif. 92807

Filed Nov. 21, 1984, Ser. No. 673,587
Int. Cl.[4] G07N *21/91*
U.S. Cl. 250—302 **4 Claims**



1. A process for detecting surface voids in objects comprising:

(a) swabbing the surface of the object to be tested with an applicator containing a fluorescent liquid dye penetrant,

(b) allowing the penetrant to remain on said surface for a period of time sufficient to permit said penetrant to reach the minimum size voids which it is desired to detect,

(c) cleaning the surface of said object,

(d) illuminating the surface of said object with ultraviolet light to reveal by fluorescent dye penetrant which is entrapped in said voids, and

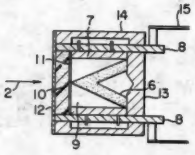
(e) visually inspecting the surface of said object for dye penetrant entrapped in said surface voids.

4,621,194

RADIATION DETECTING APPARATUS

Minoru Yoshida, Tokyo; Hiromichi Yamada, Hino; Yoko Uchida, Kawasaki; Hideki Kohno, Tokyo, and Hiroshi Takagi, Matsudo, all of Japan, assignors to Hitachi, Ltd. and Hitachi Medical Corporation, both of Tokyo, Japan

Filed Jul. 27, 1983, Ser. No. 517,695
Claims priority, application Japan, Sep. 10, 1982, 57-156748
Int. Cl.[4] G01T *1/22*
U.S. Cl. 250—367 **17 Claims**



1. A radiation detecting apparatus comprising:

a board having a plurality of grooves formed at regular intervals on one main surface thereof;

radiation shielding plates respectively inserted into respective ones of said grooves;

scintillators disposed in spaces defined by said radiation shielding plates and attached thereto;

photosensitive detectors for respectively receiving light emitted from respective ones of said scintillators and being attached to said scintillators;

a reflecting sheet for reflecting the light emission from each of said scintillators to said photosensitive detectors, said reflecting sheet is formed of a high polymer resin sheet having a thin aluminum layer forming a mirror surface on one main surface of the reflecting sheet; and

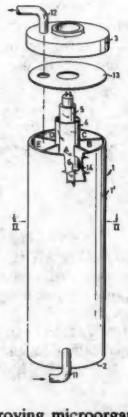
a light shielding plate for closely attaching said reflecting sheet through a cushioning material to said radiation shielding plates, whereby said scintillators are optically isolated from each other by the reflecting sheet and said cushioning material.

4,621,195

APPARATUS FOR DESTROYING MICROORGANISMS

Lars P. Larsson, Eskilstuna, Sweden, assignor to L. P. Larsson AB, Eskilstuna, Sweden

PCT No. PCT/SE84/00116, § 371 Date Nov. 20, 1984, § 102(e) Date Nov. 20, 1984, PCT Pub. No. WO84/03880, PCT Pub. Date Oct. 11, 1984
PCT Filed Mar. 29, 1984, Ser. No. 679,045
Claims priority, application Sweden, Mar. 30, 1983, 8301762
Int. Cl.[4] G01N *21/01*; H01J *37/16*
U.S. Cl. 250—438 **7 Claims**



1. Apparatus for destroying microorganisms in a bacteria-containing medium, by treating said medium with bacteria-destroying ultra-violet radiation, in which the medium is passed from an inlet (11) in an irradiation chamber (1), past a UV-lamp (5), which is preferably protected by a quartz-crystal glass tube (4), to an outlet (12), characterized in that a major irradiation chamber (1) is divided into a plurality of mutually co-acting minor chambers (A, B, C, D and E) so arranged in the lengthwise direction along the length of said UV-lamp so that during its passage through the major chamber (1), the through-flowing medium is caused to travel reciprocatingly along the UV-lamp (5) in a manner to subject the bacteria-carrying medium to a relatively long and intensive period of radiation from the UV-lamp (5), and in that the respective walls (6–9) between the mutually co-acting minor chambers (A, B, C, D and E) are alternatively provided with upper and lower connection openings (14,15) located in the radially innermost part of said walls nearest the UV-lamp (5), such that during the course of its reciprocating movement said through-

flowing medium is forced to flow along the UV-lamp (5) and is also transported therearound.

4,621,196

RADIATION IMAGE STORAGE PANEL

Satoshi Arakawa, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Japan

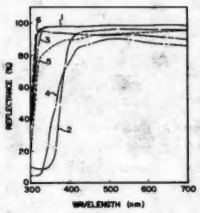
Filed Mar. 6, 1984, Ser. No. 586,691

Claims priority, application Japan, Mar. 7, 1983, 58-37838

The portion of the term of this patent subsequent to Oct. 21, 2003, has been disclaimed.

Int. Cl.[4] G01J *1/58*; G01N *21/64*; G01T *1/00*

U.S. Cl. 250—483.1 **7 Claims**



1. A radiation image storage panel comprising a support, a phosphor layer which comprises a binder and a stimulable phosphor dispersed therein, and a light-reflecting layer provided between the support and the phosphor layer which contains a white pigment, characterized in that said white pigment comprises alkaline earth metal fluorohalide represented by the formula $M^{II}FX$, in which M^{II} is at least one alkaline earth metal selected from the group consisting of Ba, Sr and Ca; and X is at least one halogen selected from the group consisting of Cl and Br.

4,621,197

MULTI-FUNCTION STARTER

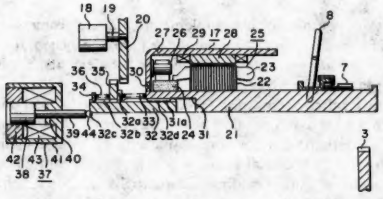
Toshinori Tanaka, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 8, 1984, Ser. No. 669,371

Claims priority, application Japan, Nov. 10, 1983, 58-175356[U]

Int. Cl.[4] F02N *15/06*

U.S. Cl. 290—38 R **6 Claims**



1. A multi-function starter which comprises a prime shaft to be rotated by a driving means and having a cylindrical recess at its one end, a pinion to be rotated by said prime shaft thereby driving a ring gear of an engine, an intermediate shaft being slidable in the axial direction to be fitted into said cylindrical recess of said prime shaft for rotation along with the prime shaft and an actuating means for moving said intermediate shaft in the axial direction to selectively engage a gear wheel fitted to said intermediate shaft with a gear wheel for an auxiliary load device.

4,621,198

METHOD AND SYSTEM FOR INTERCONNECTING TWO SYNCHRONOUS OR ASYNCHRONOUS ELECTRICAL ALTERNATING THREE-PHASE NETWORKS BY MEANS OF VARIABLE REACTIVE IMPEDANCES

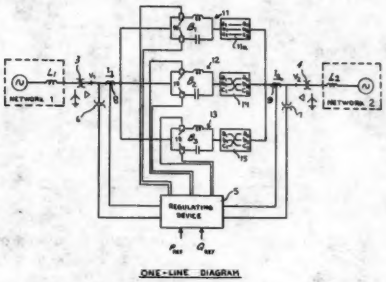
Gérald Roberge, Repentigny; Momcilo Gavrilovic, Westmount, and Pierre Pelletier, Boucherville, all of Canada, assignors to Hydro-Quebec, Montreal, Canada

Filed May 23, 1984, Ser. No. 613,221

Claims priority, application Canada, Jun. 14, 1983, 430314

Int. Cl.[4] H02J *3/34*, *3/18*

U.S. Cl. 307—82 **37 Claims**



ONE-LINE DIAGRAM

1. A system interconnecting a first and a second three-phase alternating electrical network adapted to operate asynchronously and synchronously at alternating voltages of equal or adjacent frequencies, each network comprising a first, a second and a third phase operating at the alternating voltage of this network, the laternating voltage of each phase of the first network and the alternating voltage of the corresponding phase of the second network being out of phase with respect to each other by a first angle, comprising:

a plurality of three-phase variable reactive impedance means for interconnecting the two networds and carrying out through the three-phase variable reactive impedances a desired transfer of electrical active power from one of the first and second networks to the other network, said three-phase variable reactive impedance means being adapted to establish (a) three first interconnections, each having a first susceptance, between the first phases of the first and second networks, between the second phases of the first and second networks, and between the third phases of the first and second networks, respectively, (b) three second interconnections, each having a second susceptance, between the first phase of the first network and the third phase of the second network, between the second phase of the first network and the first phase of the second network, and between the third phase of the first network and the second phase of the second network, respectively, and (c) three third interconnections, each having a third susceptance, between the first phase of the first network and the second phase of the second network, between the second phase of the first network and the third phase of the second network, and between the third phase of the first network and the first phase of the second network, respectively, said first, second and third susceptances of said first, second and third interconnections varying with said three-phase variable reactive impedances; and

regulating means for measuring electrical parameters associated with at least one corresponding phase of the first and second networks, and for operating said three-phase variable reactive impedances in relation to said measured electrical parameters in order to vary the first, second and third susceptances of said first, second and third interconnections so as to establish said desired transfer of active electrical power from one of the first and second networks

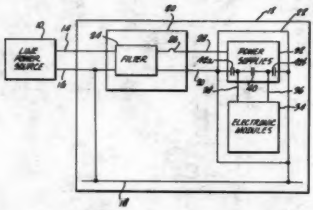
to the other network while maintaining at a desired level an electrical reactive power engaged in said desired transfer of active power.

4,521,199

PARALLEL GROUNDING SCHEME

Carl J. Bailey, San Jose, Calif., assignor to Tandem Computers Incorporated, Cupertino, Calif.

Filed Nov. 14, 1983, Ser. No. 551,280
Int. Cl.[4] H02J *1/16*
U.S. Cl. 307—147 **2 Claims**



1. A grounding system including a cabinet housing one or more card cages and wherein each card cage houses one or more electronic modules and a power supply, the system including line power means for providing line power and line ground, comprising

means electrically connecting said line power means to the power supply for providing line power to said power supply,

means electrically connecting said line power means to the power supply for providing a power supply grounding path between the line ground and power supply and for conducting current, wherein said power supply grounding path comprises a power distribution unit connected with the line power means to provide the line power and the line ground to said power supply and for filtering the power supplied thereby, and said power supply grounding path comprises an electrical path connecting said power distribution unit to said power supply and to said card cage, and

means electrically connecting the line ground to the power supply through said card cage to provide a card cage grounding path, whereby two system grounding paths for an electronic module in said card cage are provided (i) through said power supply grounding path between the power supply and the line ground, (ii) through said card cage grounding path between the power supply and the line ground through the card cage.

4,621,200

CONTROL DEVICE INCLUDING A CONDUCTIVELY ISOLATED DEPLUGGABLE CONTROLLER

Rodger T. Lovrenich, 209 Whispering Sands, Santa Teresa, N. Mex. 88008

Filed Feb. 11, 1985, Ser. No. 700,456
Int. Cl.[4] H02J *3/00*
U.S. Cl. 307—149 **25 Claims**

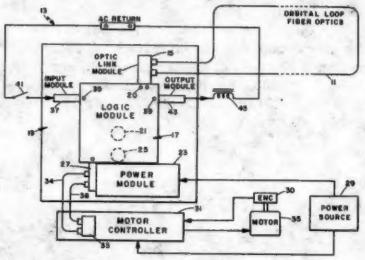
1. A control device, comprising:

logic means positioned on support means for generating and receiving optic signals according to a logic sequence and containing first magnetic coupling means;

power supply means for generating electrical power and containing second magnetic coupling means adapted for positioning on said support means adjacent said first magnetic coupling means for forming a magnetic coupling between said logic means and said power supply means to supply power to said logic means;

first optic coupling means in said logic means for generating and receiving optic logic signals;

input/output means positioned on said support means and having second optic coupling means for forming an optic coupling with said first optic coupling means to conduct optic input and output signals; and



connecting means on said input/output means for connecting said input/output means to operational elements;

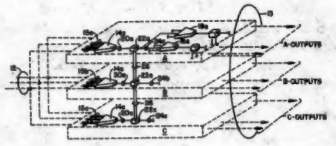
whereby coupling between said logic means, power supply means and input/output means is devoid of electrical contacts.

4,621,201

INTEGRATED CIRCUIT REDUNDANCY AND METHOD FOR ACHIEVING HIGH-YIELD PRODUCTION

Carlton G. Amdahl, Saratoga; Gene M. Amdahl, Atherton, and Robert Reinschmidt, San Jose, all of Calif., assignors to Trilogy Systems Corporation, Cupertino, Calif.

Filed Mar. 30, 1984, Ser. No. 595,097
Int. Cl.[4] H03K *19/003*
U.S. Cl. 307—219 **41 Claims**



16. An integrated circuit implementing an electronic system in the form of a signle semiconductor chip, the system including a multiplicity of interconnected circuit elements, the integrated circuit comprising:

plural configurations of the electronic system formed on the chip, each configuration having the circuit elements associated therewith forming a plurality of circuit element groups, each circuit element group of each configuration having a corresponding, substantially identical, circuit element group in each of the other configurations, each circuit element group being defined by a group output for providing a group output signal thereat;

voter means for each circuit element group, the voter means being coupled to receive the group output signals of the circuit element group and the corresponding circuit element groups to product therefrom a voted signal that is indicative of the majority of the received group output signals; and

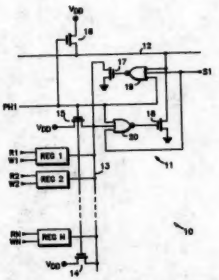
means for communicating the voted signal to predetermined other circuit element groups.

4,621,202

BI-DIRECTIONAL BUS ISOLATION CIRCUIT

Joseph Pumo, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 13, 1984, Ser. No. 670,799
Int. Cl.[4] H03K *19/096, 17/693*
U.S. Cl. 307—241 8 Claims



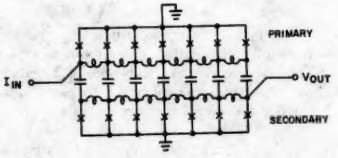
1. A circuit, comprising:
a primary bus;
a secondary bus;
a plurality of registers each having an output coupled to the secondary bus;
a first logic gate having a first input coupled to the primary bus, a second input for receiving a select signal, and an output coupled to the secondary bus;
a second logic gate having a first input coupled to the secondary bus, a second input for receiving the select signal, and an output coupled to the primary bus; and
a first precharge transistor having a control electrode for receiving a clock signal, a first current electrode coupled to a first power supply terminal, and a second current electrode coupled to the secondary bus.

4,621,203

TRANSFORMER BUILT OF COUPLED FLUX SHUTTLES

Mark F. Sweeny, St. Paul, Minn., assignor to Sperry Corporation, New York, N.Y.

Filed Sep. 10, 1984, Ser. No. 648,915
Int. Cl.[4] H03K *3/38;* H01F *15/00, 7/22*
U.S. Cl. 307—306 2 Claims



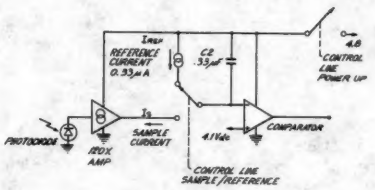
1. A transformer comprising:
at least first and second flux shuttles, each comprising an array of a plurality of adjacent current path loops that extend in a chain from a first loop to a last loop wherein each loop consists of a pair of Josephson junctions and an inductance coupled between each of said Josephson junctions wherein both of the Josephson junctions in all but the first and the last of said loops are in the current paths of two adjacent loops and each loop of said first flux shuttle is impedance coupled to a different one of said loops of said second flux shuttle, and further comprising an input connection coupled to the first loop of said first flux shuttle and an output connection coupled to the last loop of said second flux shuttle.

4,621,204

SENSOR INTEGRATOR SYSTEM

Mark C. Loessel, Mishawaka; Randall W. Miller, Goshen, and Robert W. Myers, Mishawaka, all of Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Jul. 26, 1984, Ser. No. 634,574
Int. Cl.[4] H03K *19/14, 5/22, 5/00*
U.S. Cl. 307—311 4 Claims



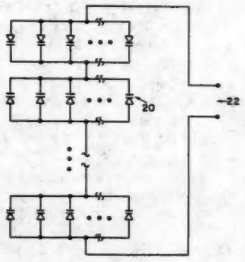
1. A sensor-integrator circuit comprising:
sensing means for producing a sample current to be integrated and which varies in accordance with a sensed parameter;
a comparator having inverting and noninverting inputs, an output and a positive voltage supply input;
charge storage means connected between the inverting input and the voltage supply input;
means for applying a voltage to the voltage supply input and a reference current to the inverting input to produce a steady state positive voltage across the charge storage device;
means for applying a reference voltage to the noninverting input of the comparator having a positive value less than and approximately equal to the steady state voltage; and
control means for applying the sample current to the inverting input of the comparator instead of the reference current for a preselected known time period and thereafter applying the reference current to the inverting input.

4,621,205

METHOD AND APPARATUS FOR REDUCING VARACTOR NOISE

Brian M. Miller, Spokane, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 16, 1984, Ser. No. 571,974
Int. Cl.[4] H03K *3/26*
U.S. Cl. 307—320 8 Claims

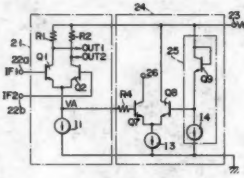


1. Apparatus for reducing varactor diode-induced noise in electronic circuits, said apparatus comprising an array of series-conducted blocks of parallel-connected varactor diodes, said array of varactor diodes having a total capacitance equivalent to the capacitance of one such such varactor diode.

4,621,206
LEVEL DETECTOR

Masaru Hashimoto, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 16, 1984, Ser. No. 610,669
Claims priority, application Japan, May 18, 1983, 58-87031
Int. Cl.[4] H03K *5/08;* **G01R** *19/22*
U.S. Cl. 307—350 **6 Claims**



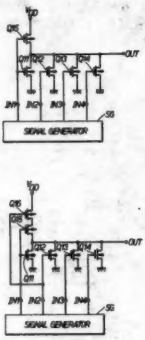
1. A voltage level detecting circuit comprising:
first and second input terminals for receiving differential input signals;
a first transistor having a base connected to said first input terminal, an emitter and a collector;
a second transistor having a base connected to said second input terminal, an emitter connected to the emitter of said first transistor, and a collector;
a power source terminal for receiving a power source voltage with respect to a ground potential;
a first load resistor electrically connected between said power source terminal and the collector of said first transistor;
a second load resistor electrically connected between said power source terminal and the collector of said second transistor;
a first constant current source electrically connected between the junction of the emitters of said first and second transistors and the ground potential;
an output terminal for supplying a signal representing a detected voltage level;
a third transistor having a collector connected to said output terminal, a base connected to the junction of the emitters of said first and second transistors, and an emitter;
a fourth transistor having an emitter connected to the emitter of said third transistor, a collector connected to said power source terminal, and a base;
a second constant current source electrically connected between the junction of the emitters of said third and fourth transistor and the ground potential; and
bias voltage circuit means for applying a predetermined bias voltage to the base of said fourth transistor.

4,621,207
LOGIC CIRCUIT WITH MOSFETS ARRANGED TO REDUCE CURRENT FLOW

Kazuo Suganuma, and Tsuneo Hamai, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba and Toshiba Micro-Computer Engineering Corp., both of Kawasaki, Japan

Filed Aug. 24, 1984, Ser. No. 643,713
Claims priority, application Japan, Feb. 20, 1984, 59-28481
Int. Cl.[4] H03K *19/017, 19/094, 19/20*
U.S. Cl. 307—451 **26 Claims**

1. A logic circuit for producing an output signal responsive to input signals comprising:
first and second power source terminals;
and output terminal;
a plurality of MOSFETs of a first conductivity type having current conducting terminals connected in parallel between said first power source terminal and said output terminal, each of said MOSFETs being controlled by one of said input signals, respectively, and
only one MOSFET of a second conductivity type having current conducting terminals connected between said second power source terminal and output terminal and controlled by one of said input signals which necessarily controls one of said plurality of MOSFETs, the channel

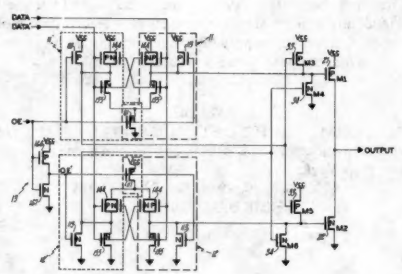


resistance of said MOSFET of second conductivity type when conducting being larger than that of each one of said MOSFETs of first conductivity type when conducting.

4,621,208
CMOS OUTPUT BUFFER

Hiep van Tran, Carrollton, Tex., assignor to Thomson Components - Mostek Corporation, Carrollton, Tex.

Filed Sep. 6, 1984, Ser. No. 647,970
Int. Cl.[4] H03K *19/017, 19/094, 19/20, 17/693*
U.S. Cl. 307—473 **3 Claims**



1. A complementary drive circuit comprising: means supplying a pair of complementary signals, first and second NAND circuits, first and second NOR circuits, one of the complementary signals being applied as an input to each of the first NAND and first NOR circuits, the other of the complementary signals being applied as an input to each of the second NAND and second NOR circuits, means supplying an enable pulse as an input to each of the first and second NAND circuits and its complement to each of the first and second NOR circuits, first and second complementary serially connected output drive transistors, the output of the first NAND circuit being supplied as the input to the first drive transistor, and the output of the first NOR circuit being supplied as the input to the second drive transistor, a pair of pull-up transistors, and a pair of pull down transistors, the first of each being associated with the first output transistor and the second of each with the second output transistor, the output of the second NAND circuit being supplied as the input to each of the pull up transistors and the output of the second NOR circuit being supplied on the input to each of the pull down transistors, and means for

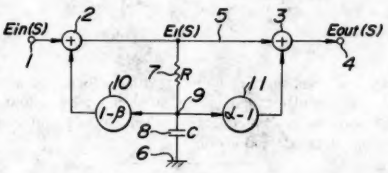
obtaining the output signal from the node between the serially connected output drive transistors.

4,621,209

FREQUENCY-INDEPENDENT PHASE COMPENSATION CIRCUIT

Kazumasa Ishikawa, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 426,894, Sep. 29, 1982, abandoned. This application Nov. 19, 1984, Ser. No. 672,669
Claims priority, application Japan, Nov. 6, 1981, 56-177032
Int. Cl.[4] H03H *11/20*
U.S. Cl. 307—511 **7 Claims**



1. A phase compensation circuit comprising:
an input terminal for receiving an input signal to be phase-compensated;
an output terminal for deriving a phase-compensated output signal;
a signal line connecting said input and output terminals to each other;
a time constant circuit including a series connection of a resistor and a capacitor and connected between said signal line and a reference potential point;
a first active circuit having an amplification $(1-\beta)$ and connected between a junction between the resistor and capacitor of said time constant circuit and said input terminal for feeding-back a junction voltage at the junction to the input terminal; and
a second active circuit having an amplification $(\alpha-1)$ and connected between the junction and the output terminal for feeding-forward the junction voltage to the output terminal;
whereby a phase-frequency characteristic of the phase compensation circuit is directly controlled by adjusting the amplifications of the first and second active circuits, while a condition $\alpha\beta=1$ is always satisfied.

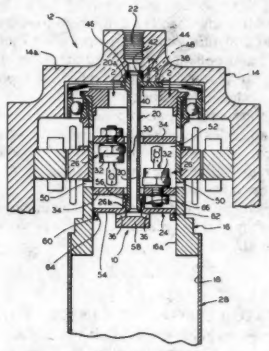
4,621,210

ELECTRIC GENERATOR COOLING ARRANGEMENT

Alexander Krinickas, Jr., Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Nov. 22, 1985, Ser. No. 800,680
Int. Cl.[4] H02K *1/32*
U.S. Cl. 310—61 **20 Claims**

1. A cooling arrangement for an electric generator, comprising:
a generator housing having a shaft mounted for rotation therein;
an oil transfer tube extending from one end of said housing within said rotating shaft in generally coaxial relation, said oil transfer tube having one end mounted in stationary non-rotating relation to said one end of said housing in communication with an oil inlet through said housing, said oil transfer tube having the other end mounted within a rotating fitting in said rotating shaft;
rectifying means mounted within said shaft for rotation therewith, said rectifying means being disposed about said oil transfer tube in spaced relation thereto, said rectifying means being positioned upstream of said rotating fitting; and
rotor means mounted within said shaft for rotation therewith, said rotor means being disposed in axially spaced relation to said oil transfer tube, said rotor means being positioned downstream of said rotating fitting;



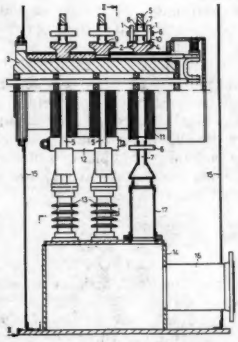
said oil transfer tube having a radially extending orifice for spraying oil passing through said oil transfer tube into the path of travel of said rotating rectifying means upstream of said rotating fitting;
said rotating fitting having an opening for carrying oil passing through said oil transfer tube into said rotor means within said rotating shaft downstream of said rectifying means.

4,621,211

ELECTRICAL MACHINE BRUSHES AND SLIPRINGS WITH BRUSH DUST COLLECTING APPARATUS

Franz Spirk, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich and Berlin, Fed. Rep. of Germany

Filed May 6, 1985, Ser. No. 731,117
Claims priority, application Fed. Rep. of Germany, May 11, 1984, 3418014
Int. Cl.[4] H02K *9/28*
U.S. Cl. 310—232 **14 Claims**



1. An electrical machine with power supplied through brushes and sliprings to the rotor having a brush dust collecting apparatus comprising:
a plurality of brush supports, one for each said slipring, each circumferentially located to each respective slipring; each surrounding a respective ring-shaped dust collecting

chamber circumferentially located to each respective slipring;

two circumferential openings between each said slipring and each respective brush support to the respective dust collecting chamber;

suction means connected to said ring-shaped brush dust collecting chambers to draw in air and airborne brush dust from said sliprings and said brushes;

a common collecting chamber connected to said ring-shaped brush dust collecting chambers and to said suction means to receive and collect said air and airborne brush dust;

a plurality of insulators fastening said brush supports to said common collecting chamber;

a plurality of brush bolts, each penetrating one of said brush supports and one of said ring-shaped dust collecting chambers for pairwise mounting of said brushes on each side of said brush dust collecting chamber adjacent to the circumferential opening; and

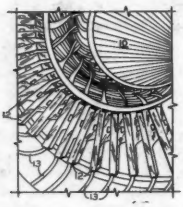
at least one thick-walled glass cylinder connecting each of said ring-shaped dust collecting chambers to said common collecting chamber.

4,621,212

STATOR CONDUCTOR INSULATOR

Kevork A. Torossian, Schenectady; Ralph T. Heisler, Scotia, and Frederick E. Cox, Gloversville, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 2, 1984, Ser. No. 595,596
Int. Cl.[4] H02K *3/46*
U.S. Cl. 310—260 **5 Claims**



1. In a stator of a large steam turbine generator having a plurality of stator bars and liquid-coolant series loops connected to the stator bars, the combination of a clamshell mold of a first plastic material comprising two half shells having edge portions interfittingly overlapped providing a closed fill chamber and enclosing an end portion of one of said plurality of stator bars, and an end portion of one of said plurality of liquid-coolant series loops connected to said end portion of said one of said plurality of stator bars and having apertures through which said one of said plurality of stator bars and liquid-coolant series loops extend, and cured second plastic material filling the fill chamber and bonded to said connected end portion of said one of said plurality of stator bars and one of said plurality of loops liquid-coolant series within the clamshell mold fill chamber.

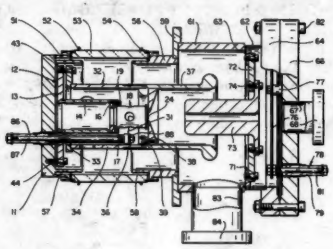
4,621,213

ELECTRON GUN

Roy E. Rand, Palo Alto, Calif., assignor to Imatron, Inc., South San Francisco, Calif.

Filed Jul. 2, 1984, Ser. No. 626,996
Int. Cl.[4] H01J *1/00*
U.S. Cl. 313—237 **5 Claims**

1. An electron gun comprising a base, a cathode assembly support, a cathode assembly removably mounted on said cathode assembly support, a focusing electrode assembly, means for adjustably mounting said focusing electrode assembly to said cathode assembly support whereby the focusing electrode assembly can be pre-aligned to said cathode assembly, means for mounting said pre-aligned focusing electrode assembly and cathode support to said base whereby they can be aligned, means for mounting an anode spaced from said cathode assembly, and an insulator serving to support said anode mounting



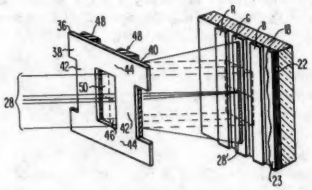
means from said base in alignment with the focusing electrode, said base, insulator and anode mounting means defining a portion of an evacuated envelope enveloping said cathode, focusing electrode and anode.

4,621,214

COLOR SELECTION MEANS HAVING A CHARGED INSULATOR PORTION FOR A CATHODE-RAY TUBE

Stanley Bloom, Bridgewater, and Eric F. Hockings, Princeton, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Apr. 19, 1984, Ser. No. 602,155
Int. Cl.[4] H01J *29/80*
U.S. Cl. 313—402 **6 Claims**



1. In a cathode-ray tube including

a display screen comprising an array of phosphor stripes of a plurality of different emission colors arranged in cyclic order in adjacent groups,

means for producing a plurality of convergent electron beams directed toward said display screen,

color selection means positioned between said display screen and said beam-producing means, said color selection means including a metal masking plate having therein an array of apertures arranged in columns that are substantially parallel to said phosphor stripes, and beam-influencing means disposed on said metal masking plate which in combination with said metal masking plate define an array of windows for transmitting therethrough portions of said electron beams, and

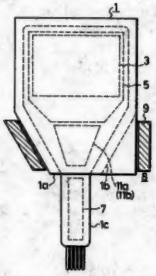
means for applying a potential to said metal masking plate and said display screen, the improvement wherein

said beam-influencing means comprising strips of insulation disposed between the aperture columns on the side of said metal masking plate facing said display screen, said strips of insulation being arranged parallel to said phosphor stripes, said strips of insulation being charged to a focusing potential by secondary electrons incident thereon, said secondary electrons emanating from said display screen as a result of the impingement thereon of said electron beams.

4,621,215
CONVERGENCE SYSTEM FOR A MULTI-BEAM ELECTRON GUN

Sakae Tanaka, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

PCT No. PCT/JP83/00073, § 371 Date Nov. 16, 1983, § 102(e) Date Nov. 16, 1983, PCT Pub. No. WO83/03162, PCT Pub. Date Sep. 15, 1983
PCT Filed Mar. 10, 1983, Ser. No. 555,873
Claims priority, application Japan, Mar. 10, 1982, 57-37455
Int. Cl.[4] H01J *29/70*
U.S. Cl. 313—422 **1 Claim**



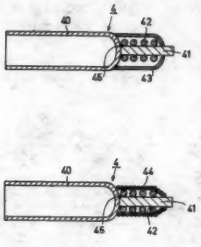
1. In a multi-beam electron gun for use with a flat type cathode ray tube having a phosphor screen with an electrode determining a landing position of an electron beam from said electron gun and an opening electrode provided in a flat tube envelope in facing relation so as to form a first deflecting system therebetween, a multi-beam electron gun located in the extended direction parallel to said phosphor screen providing a plurality of electron beams and a second deflecting system located between said multi-base electron gun and said first deflecting system providing horizontal scanning deflection of the beams in the direction substantially perpendicular to the axial direction of the beams and parallel to the surface of said screen and providing vertical scanning deflection of the beams in the direction perpendicular to the horizontal deflection to deflect the beam in cooperation with said first deflecting system onto said screen, the plurality of electron beams being intersected with one another at approximately the center of a main electron lens which carries out substantial focusing of said electron beams in said electron gun, said plurality of electron beams passed through said main electron lens being converged by front and rear convergence means onto said determining electrode, and a predetermined potential being applied to at least one of said front and rear convergence means to thereby carry out dynamic convergence compensation of said plurality of electron beams.

4,621,216
HIGH-PRESSURE DISCHARGE LAMP WITH SHIELDED ELECTRODE

Johan Liebe; Andreas S. G. Geven; Antonius J. G. C. Driessen, and Jan R. deBie, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 23, 1984, Ser. No. 602,852
Claims priority, application Netherlands, Apr. 22, 1983, 8301418
Int. Cl.[4] H01J *61/06, 61/36*
U.S. Cl. 313—613 **18 Claims**

1. A high-pressure discharge lamp comprising a sealed discharge envelope with a ceramic wall enclosing a discharge space, containing vaporizable and ionizable fill and provided with a pair of electrodes between which a discharge path extends, at least one electrode being provided with a rod which is connected to a tubular lead-through member and on which an emitter-containing element is arranged which is screened from the discharge space by means of a screening body, characterized in that the screening body extends with a constant cross-section from the tubular lead-through member

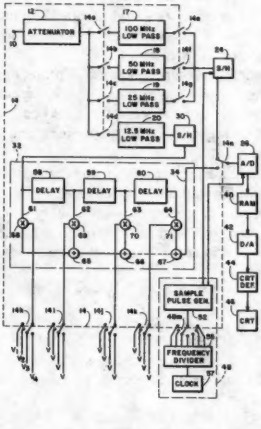


to the end of the emitter-containing element facing the discharge path and is in mechanical contact with the tubular lead-through member substantially over its whole cross-sectional area.

4,621,217
ANTI-ALIASING FILTER CIRCUIT FOR OSCILLOSCOPES

Charles L. Saxe, Beaverton, and Roydn D. Jones, Aloha, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Sep. 21, 1984, Ser. No. 652,700
Int. Cl.[4] H01J *23/34*
U.S. Cl. 315—1 **11 Claims**



1. An anti-aliasing filter circuit for a digital oscilloscope having a controllable sweep-rate and including digitizing means for converting an analog signal to digital values for storage in said digital oscilloscope, said circuit comprising:

means for providing a signal input,

a plurality of low pass analog filters for receiving said signal input,

a digital filter for receiving said signal input, said digital filter having an electrically controllable pass band,

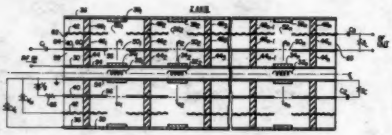
and means for controlling the sweep-rate of said oscilloscope simultaneously with selection of signal outputs of said analog filters at higher sweep-rates and selection of the signal output of said digital filter at slower sweep-rates for coupling to said digitizing means while controlling the pass band of said digital filter at slower sweep rates in order to pass selected frequencies less than half the sampling rate of said digitizing means.

4,621,218

TRANSVERSE FIELD INTERACTION MULTIBEAM AMPLIFIER

Louis J. Jasper, Jr., Ocean; Charles M. DeSantis, and James F. Baxendale, both of Neptune, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 2, 1984, Ser. No. 640,184
Int. Cl.[4] H01J *25/34*
U.S. Cl. 315—3.6 **19 Claims**



1. A transverse field interaction device, comprising:

an inner coaxial cathode structure including a plurality of discrete radially disposed electron emitting cathode electrodes for emitting a plurality of radial electron beams;

an outer coaxial electron collector structure including a like plurality of discrete radially disposed electron collector electrodes located outwardly from and aligned with said cathode electrodes; a coaxial grid structure including a like plurality of radially disposed grid electrodes located intermediate and aligned with said cathode and collector electrodes;

a coaxial slow wave propagation and electron acceleration structure between said grid and collector electrodes including respective radially disposed apertures for the passage of electrons from each of said cathodes to respective collector electrodes;

first RF signal propagation means including at least said grid electrodes for propagating an input RF wave transversely relative to electron emission from said cathode electrodes for modulating and thereby prebunching said electron beams; and

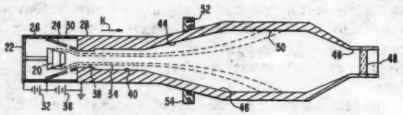
second RF signal propagation means including at least said slow wave propagation structure for propagating an induced amplified RF output wave in the same direction as said input wave and resulting from said prebunched electron beams traversing respective apertures in said slow wave structure.

4,621,219

ELECTRON BEAM SCRAMBLER

Lowell J. Fox, Redwood City, and Joseph J. Manca, Sunnyvale, both of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Jul. 17, 1984, Ser. No. 630,221
Int. Cl.[4] H01J *25/02*
U.S. Cl. 315—5 **22 Claims**



12. In a gyrotron type microwave tube:

means for generating a beam of electrons having a component of velocity along a longitudinal axis;

interaction cavity means for causing said beam to generate an electromagnetic wave;

collector means for said beam downstream of said cavity means for intercepting the electrons of said beam;

window means at the downstream end of said collector means for extracting said wave; and

a first and second means for producing at said collector a nonuniform magnetic field transverse to said axis, varying in direction and/or strength, said second means being displaced from said first means axially and azimuthally about said axis.

4,621,220

INCANDESCENT LAMP HAVING TWO LEAD-IN CONDUCTORS SEALED WITHIN ONE END THEREOF

Merle E. Morris, Lexington; Steven L. Meade, Winchester, and Stephen P. Senft, Lexington, all of Ky., assignors to GTE Products Corporation, Stamford, Conn.

Filed Feb. 1, 1984, Ser. No. 575,965
Int. Cl.[4] H01J *5/48, 5/50*
U.S. Cl. 313—318 **7 Claims**

1. In an incandescent lamp including a long, small diameter tubular envelope having first and second press-sealed end portions, a coiled filament extending longitudinally through the interior of said envelope, at least one filament support member located within said envelope for supporting said filament within said envelope at a location between the ends of said filament and first and second lead-in conductors, each of said lead-in conductors extending within said envelope and electrically connected to a respective one of the ends of said coiled filament, the improvement wherein both of said lead-in conductors are positioned within said first press-sealed end portion of said envelope in a spaced-apart relationship to thereby enable electrical connections for providing electrical energy sufficient to activate said filament to be attached to said incandescent lamp at only said first press-sealed end portion, said first lead-in conductor electrically connected to said end of said filament nearest said first press-sealed end portion of said envelope and said second lead-in conductor connected to said end of said filament nearest said second press-sealed end portion of said envelope, said second lead-in conductor including a conductive wire inner portion extending longitudinally through said interior of said envelope substantially parallel to said filament and extending within said second pess-sealed end portion of said envelope, a singular foil element hermetically sealed within said second press-sealed end portion, and a conducting wire member electrically connected to said foil element within said second press-sealed end portion and extending within said envelope for being electrically connected to said end of said filament nearest said second press-sealed end portion, said lamp further including a tubular, electrically insulative member located within said interior of said envelope and extending substantially the entire length thereof, said insulative member passing through and engaged by said filament support member while being spaced from and substantially parallel to said coil filament, said conductive wire inner portion of said second lead-in conductor being positioned within said tubular insulative member.

4,621,221

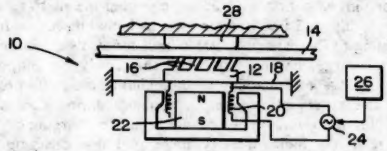
REVERSIBLE VIBRATORY MOTOR

James K. Lee, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 26, 1985, Ser. No. 749,033
Int. Cl.[4] H02K *33/12*
U.S. Cl. 318—123 **9 Claims**

1. A vibratory motor for producing reversible motion, said motor having a periodically deflected driving member and a

driven member adapted to be engaged by the driving member to produce relative motion therebetween, characterized in that said driving member is responsive to a first frequency of periodic deflection for driving said driven member in one direction, and said driving member is responsive to a second frequency of periodic deflection for driving said driven member in a direction opposite to said one direction.

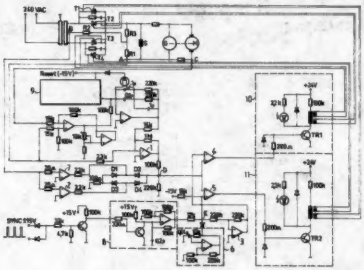


4,621,222

METHOD FOR IMPROVING THE DYNAMIC CONVERTER DRIVE FOR A DIRECT CURRENT ELEVATOR MOTOR

Matti Kihkipuro, and Heimo Mäkinen, both of Hyvinkää, Finland, assignors to Elevator GmbH, Baar, Switzerland

Filed Jul. 25, 1985, Ser. No. 758,975
Int. Cl.[4] H02P 7/16
U.S. Cl. 318—146 **4 Claims**



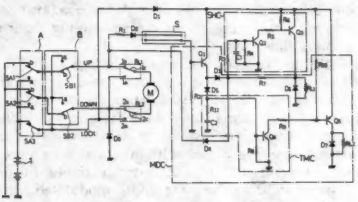
1. In a dynamic converter drive for a direct current elevator motor including:
a 240 V ac power supply;
a generator, having a magnetizing circuit and a magnetizing winding, linked to the motor;
a center-tapped transformer and two thyristor bridges for providing power to the magnetizing winding;
a speed control unit;
a power electronics stage having a changeover control unit;
a diode bridge;
a sync ±15 power supply and a first and a second pulse controlling units for controlling the input current to the thyristor bridges depending on their input voltage;
the motor being controlled by adjusting the magnetization of the generator using at least the elevator speed and the motor current consumption;
a method for improving the dynamic converter drive comprising the steps of:
measuring a first current at a first point of said magnetizing circuit, said first current indicating the generator magnetizing current value which is supplied to the speed control unit;
measuring a second current at a second point of said magnetizing circuit, said second current representing the value of current in the thyristor bridges which is supplied to the changeover control unit of the power electronics state;
supplying said first current and second current to the diode bridge so that said diode bridge constantly supplies at least a minumum output voltage to said thyristor bridges whereby a continuous DC-to-AC conversion occurs in said thyristor bridges, the value of said minimum output voltage being determined by said speed controller unit;
generating a sawtooth wave having a frequency equal to that of said sync ±15 V power supply;
generating a rectangular wave;
combining said sawtooth wave and said rectangular wave to generate a combined wave;
determining the difference between the voltage of said combined wave and said minimum output voltage to produce a first set of pulse signals;
determining the difference between the voltage of the inverse of said combined wave and said minimum output voltage to produce a second set of pulse signals;
feeding said first and second sets of pulse signals to said first and second pulse controlling units, respectively;
whereby said thristor changeover takes place automatically when the magnetizing current changes direction, and whereby no current flows when said first current is equal to zero.

4,621,223

LOAD DRIVE CONTROL SYSTEM FOR A MOTOR VEHICLE WINDOW

Yuichi Murakami, Tokyo; Kenichi Komuro, Toyota; Taneichi Kawai, Anjyo; Gosaku Terabayashi, Okazaki, and Hisatoshi Ohta, Kariya, all of Japan, assignors to Aisin Seiki Kabushikikaisha and Toyota Jidosha Kabushikikaisha, both of, Japan

Filed Jul. 5, 1985, Ser. No. 751,920
Claims priority, application Japan, Jul. 5, 1984, 59-139349; Jul. 26, 1984, 59-155932; Aug. 2, 1984, 59-159745
Int. Cl.[4] H02P 1/22
U.S. Cl. 318—282 **16 Claims**



1. A load drive control system comprising
a d.c. motor for driving a load in a forward and a reverse direction, the motor having a first and a second terminal which feed the motor;
a plurality of supply lines which supply a voltage to the motor to energize it;
first switching means for selectively applying a first or a second potential on the supply lines to the first terminal;
second switching means for selectively applying the second or the first potential on the supply lines to the second terminal;
a sensor for detecting the presence of any object which stands in the way to the movement of a load;
self-hold means for changing the first switching means to a condition in which it applies the second potential to the first terminal in response to a detection signal from the sensor;
automatic return control means for changing the second switching means to a condition in which it applies the first potential to the second terminal in response to a detection signal from the sensor and subsequently for changing the second switching means to a condition in which it applies the second potential to the second terminal in response to the cessation of a detection signal from the sensor;

and reset means for resetting the self-hold means.

4,621,224

POSITION/SPEED DETECTION METHOD AND APPARATUS

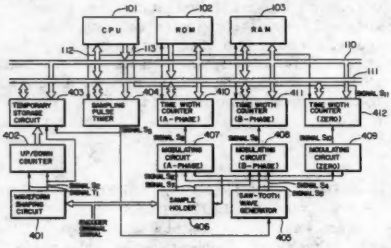
Mitsuru Watabe; Shigeki Morinaga, both of Hitachi; Yasuyuki Sugiura, Takahagi, and Tadashi Takahashi, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 11, 1985, Ser. No. 721,959

Claims priority, application Japan, Apr. 12, 1984, 59-71865

Int. Cl.[4] G05B *11/18*

U.S. Cl. 318—594 **9 Claims**



1. A position/speed detection apparatus for detecting the position and speed of a moving body by using an encoder, comprising:

a coarse position detecting section including a waveform shaping circuit which is responsive to an encoder original signal to produce an encoder pulse, an up/down counter which counts the encoder pulse to detect a coarse position, and a temporary storage circuit for temporarily storing the detected coarse position from the up/down counter in order to synchronize the coarse position with a sampling signal generated from a sampling timer at each sampling time; and

a fine-position detecting section including a sample holder for holding the encoder original signal for the sampling time, a saw-tooth wave generating circuit which is actuated by the sampling signal from the sampling pulse timer to generate a carrier wave on which the held encoder original signal is pulse-width modulated, a pulse-width modulating circuit, and a time-width counter for counting the pulse width of the pulse-width modulated carrier; the sampling pulse timer, the temporary storage circuit and the time-width counter being connected to an arithmetic control section.

4,621,225

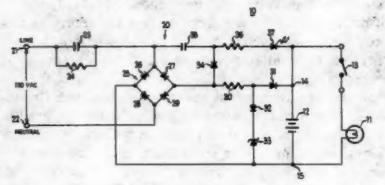
PASSIVE TRANSFORMERLESS BATTERY CHARGING CIRCUIT

Daniel J. Birk, Aurora, Ill., assignor to Pittway Corporation, Aurora, Ill.

Filed Feb. 6, 1984, Ser. No. 577,218

Int. Cl.[4] H02J *7/00*

U.S. Cl. 320—21 **20 Claims**



1. A charging circuit for charging a low voltage battery from an AC supply voltage, said charging circuit comprising: input terminals adapted to be connected to the AC supply and output terminals adapted to be connected to an associated battery, first and second charging means, means capacitively coupling said first and second charging means to said input terminals, said first charging means including means for providing to the battery at said output terminals a rectified relatively large charging current at a relatively low output voltage, said second charging means including means for providing to the battery at said output terminals during alternate half cycles of the AC supply voltage a limited charging current at a relatively high output voltage, said first charging means including control means for terminating the current flow from said first charging means to said output terminals when the voltage of the associated battery reaches a predetermined level.

4,621,226

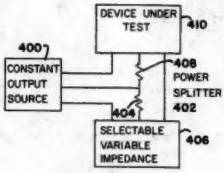
APPARATUS AND METHOD FOR DETERMINING AN INPUT ELECTRICAL CHARACTERISTIC OF A DEVICE UNDER TEST

Robert C. Powell, Gaithersburg, Md., assignor to Weinschel Engineering Co., Inc., Gaithersburg, Md.

Filed May 23, 1984, Ser. No. 613,340

Int. Cl.[4] G01R *27/06, 27/04*

U.S. Cl. 324—58 B **26 Claims**



14. Apparatus for determining the value of an input characteristic of a device under test where (a) the input characteristic relates to the response of the device under test to the application of power thereto and (b) the device under test is adapted to measure at least one variable electrical component of power applied thereto;

the apparatus comprising:

a network having (a) three ports and (b) a symmetrical power splitter disposed between the three ports;

source means for providing a known electrical signal of known incident power to the first of said three ports; and

means for selectively attaching to a second of the three ports either (a) an open circuit termination, (b) a short circuit termination, or (c) a matched termination having a reflection coefficient of zero;

the device under test being positioned at a third of the three ports, the device under test measuring said at least one variable electrical component of the incident power when the second port has selectively attached thereto (a) the open circuit termination (b) the short circuit termination, or (c) the matched termination;

the apparatus further comprising:

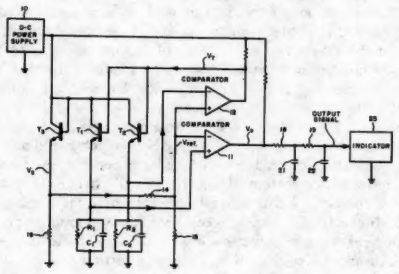
means for combining separate measurements made by the device under test when each of all three different terminations is selectively attached to the second port, the separate measurements being combined to yield a value of said input characteristic of the device under test.

4,621,227

MEASURING SYSTEM FOR DETERMINING THE CAPACITANCE RATIO OF A PAIR OF CAPACITORS

Harry J. Venema, Wheaton, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Feb. 29, 1984, Ser. No. 584,564
Int. Cl.[4] G01R 27/26
U.S. Cl. 324—60 CD 1 Claim



1. A measuring system for comparing first and second unknown capacitors to determine the ratio of their capacitances, comprising:

means for simultaneously, and rapidly, charging the first and second unknown cpacitors, at time t_0, to the same d-c voltage V_s by turning on a pair of substantially identical first and second transistors each of which series connects a respective assigned one of the first and second unknown capacitors to a d-c power supply, the voltage V_s, to which each of the capacitors is charged, being equal to the output voltage of the d-c power supply less the voltage drop across the capacitor's series-connected transistor;

A series combination of a resistor and a third transistor, whose base and collector are interconnected to form a diode, connected across said d-c power supply and which third transistor is substantially identical to said first and second transistors, the d-c voltage across said resistor thereby being equal to the voltage V_s;

a voltage divider connected across said resistor for producing a d-c reference voltage $V_{ref.}$ which is significantly less than, but is directly proportional to and varies in step with variations of, the voltage V_s;

means for simultaneously, and slowly, discharging the first and second capacitors from d-c voltage V_s to the same d-c reference voltage $V_{ref.}$, said first and second transistors being turned off to initiate discharging of the first and second capacitors, each of which capacitors is shunted by a discharge resistor through which the capacitor discharges,

the first capacitor having a discharge time constant, determined by its capacitance and the resistance of its shunting discharge resistor, substantially shorter than the discharge time constant of the second capacitor, which is determined by its capaitance and its shunting resistance, and discharging to the reference voltage $V_{ref.}$, at time t_1, long before the second capacitor reaches the reference voltage at the later time t_2, the time duration from t_0 to t_1 thereby being a function of the capacitance of the first capacitor while the time duration from t_0 to t_2 is a function of the capacitance of the second capacitor,

the second capacitor, its series-connected second transistor and its shunt-connected discharge resistor being included in an oscillating circuit which produces periodically-recurring triggering pluses to turn said first and second transistors on to effect rapid charging of the first and second unknown capacitors, the triggering pulses being produced in the oscillating circuit by a voltage comparator which compares the voltage across the second capacitor to the d-c reference voltage $V_{ref.}$, the period of the triggering pulses thereby being a function of the capacitance of the second capacitor and being equal to the time duration from t_0 to t_2;

another voltage comparator which compares the voltage across the first capacitor to the d-c reference voltage $V_{ref.}$ to detect when the first capacitor discharges to the reference voltage, thereby to determine the time duration from t_0 to t_1,

said other voltage comparator producing a periodically-recurring rectangular wave whose duty cycle represents the ratio of the capacitances of the first and second unknown capacitors, the rectangular wave having pulse components each of which has a pulse width equal to the time duration from t_0 to t_1 while the period of the rectangular wave is equal to the time duration from t_0 to t_2;

an averaging circuit for producing, from said periodically-recurring rectangular wave, an output signal having an amplitude which is proportional to the ratio of the capacitances of the first and second unknown capacitors;

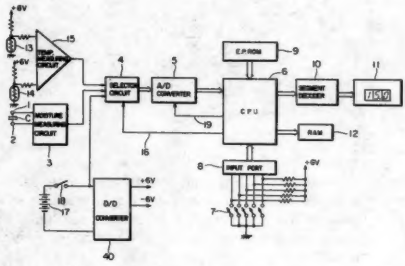
and indicating means, responsive to said output signal, for providing an indication of the value of the capacitance ratio of the first and second unknown capacitors.

4,621,228

ELECTRIC MOISTURE METER

Kuni Toki, Kawasaki, and Osamu Sindou, Tokyo, both of Japan, assignors to Kett Electric Laboratory, Tokyo, Japan

Filed Nov. 9, 1984, Ser. No. 669,973
Claims priority, application Japan, May 21, 1984, 59-102430
Int. Cl.[4] G01R 27/02, 15/10, 27/26
U.S. Cl. 324—61 R 3 Claims



1. An electrical moisture meter for indicating the moisture content of a cereal sample filled between two electrodes thereof comprising:

(a) a plurality of keys for designating the type of the sample;

(b) a moisture content measuring circuit for producing a voltage signal representing said moisture content;

(c) a temperature measuring circuit including a temperature sensor arranged near said sample for producing a measured temperature signal;

(d) an analog to digital converter circuit for producing a digital signal value corresponding to an input analog voltage signal;

(e) a selector circuit connected to both of said moisture content and temperature measuring circuits for receiving said measured temperature signal and said moisture content signal, and applying one of said signals to said analog to digital converter;

(f) a programmable read only memory EPROM capable of erasure and rewriting for storing parameters for computation according to the type designated, said EPROM storing temperature computation parameters for each type of sample, said EPROM mounted on an IC socket for easy replacement, and said EPROM written with said computation parameters determined on the basis of original data measured from said moisture content measuring circuit;

(g) a processor unit for producing a moisture content value calculated on the basis of the computation parameters read from said EPROM in accordance with the type designated by said plurality of keys, said processor determining a moisture content value based upon a digital signal received from said analog to digital converter circuit representing the measured moisture content and temperature of said sample, said processor applying either a resulting calculated temperature compensated moisture content value to an indicator, or measured original moisture data at the selection of said keys, said processor further calculating said computation parameters based upon original data, and writing said computation parameters in said EPROM, whereby subsequent measured moisture data may be modified on the basis of said stored computation parameters to derive said temperature compensated moisture content value; and

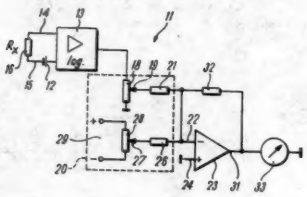
(h) an indicator for indicating said temperature compensated moisture content value in digital form.

4,621,229

INSTRUMENT FOR MEASURING THE MOISTURE CONTENT OF SOLIDS

Friedrich Hirth, Stuttgart, Fed. Rep. of Germany, assignor to Gann Mess- U. Regeltechnik GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 13, 1984, Ser. No. 640,382
Int. Cl.[4] G01R *27/02*
U.S. Cl. 324—65 R **17 Claims**



1. An instrument for measuring moisture content, particularly the moisture content of granular and non-granular solids including grain and wood, said instrument comprising:

(a) a sensor for contacting a material undergoing moisture determination;

(b) an indicator for indicating the moisture content of the material; and

(c) a calibrating unit between said sensor and said indicator designed to calibrate said instrument for different materials, said calibrating unit including a calibrating voltage source, a summing device having output means connected with said indicator and input means, a first voltage adjusting device having a first input connected with said sensor and a first output connected with said input means, and a second voltage adjusting device having a second input connected with said calibrating voltage source and a second output connected with said input means.

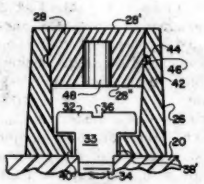
4,621,230

ANTI-TAMPER FASTENER SHIELDING DEVICE

Jack S. Crouch, Charlotte, and Edward F. Zink, Matthews, both of N.C., assignors to Carolina Moldings, Inc., Charlotte, N.C.

Filed Nov. 23, 1983, Ser. No. 555,033
Int. Cl.[4] F16B *41/00*; G09F *3/00*
U.S. Cl. 324—110 **25 Claims**

14. Apparatus for assembly with a fastener of the type having a stem and an enlarged head during use of said fastener for deterring and detecting tampering therewith, said apparatus comprising a jacket member having a housing portion having an opening therethrough for receiving said fastener head to be encircled by said housing portion and having an annular collar portion constricting said opening for extension through said collar portion of said fastener stem and for disposition of said collar portion adjacent the underside of said fastener head, a cap member adapted to fit in said opening of said housing portion for enclosing said fastener head therein, and resilient snap means on said housing portion of said jacket member and on said cap member for deforming engagement therebetween for gripping affixation thereof together by a resilient interference-type snap fit, said snap means including an annular channel formed in one of the interior wall surface of said housing portion and the outer annular surface of said cap member and an annular rib formed in the other of said interior wall surface of said housing portion and said outer annular surface of said cap member for engagement in said channel, said housing portion being resiliently expandable outwardly and said cap member being resiliently deformable for passage of said cap member into said opening of said jacket member and said rib into said channel, said channel and rib being cooperatively dimensioned for seating of said rib in said channel in at least partial conformity with said channel for providing a relatively tight frictional fit therebetween for secure gripping engagement between said jacket member and said cap member, said interior annular surface of said housing portion and said outer annular surface of said cap member extending at differing relative angles for an interference fit therebetween for causing deformation thereof to enhance the gripping engagement between said jacket member and said cap member, thereby for shielding said fastener head for preventing access thereto without detectably damaging one or both said jacket member and said cap member.



20. In combination with a utility meter or the like having a usage measuring assembly, a cover member for protection of said measuring assembly and a fastener of the type having a stem and an enlarged head holding said cover member in place, the improvement comprising apparatus formed integrally with said cover member for receiving said fastener for deterring and detecting tampering therewith, said apparatus comprising a jacket member having a housing portion having an opening therethrough for receiving said fastener head to be encircled by said housing portion and having an annular collar portion constricting said opening for extension through said collar portion of said fastener stem and for disposition of said collar portion adjacent the underside of said fastener head, a cap member adapted to fit in said opening of said housing portion for enclosing said fastener head therein, and resilient snap means on said housing portion of said jacket member and on said cap member for gripping affixation thereof together by a resilient snap fit, said snap means including an annular channel formed in one of the interior wall surface of said housing portion and the outer annular surface of said cap member and an annular rib formed in the other of said interior wall surface of said housing portion and said outer annular surface of said cap member for engagement in said channel, said housing portion being resiliently expandable outwardly and said cap member being resiliently deformable for passage of said cap member into said opening of said jacket member and said rib into said channel, said channel an rib being cooperatively dimensioned for seating of said rib in said channel in at least partial conformity with said channel for providing a relatively tight frictional fit therebetween for secure gripping engage-

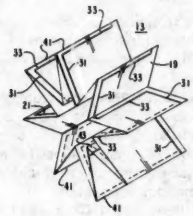
ment between said jacket member and said cap member, said interior annular surface of said housing portion and said outer annular surface of said cap member extending at differing relative angles for an interference fit therebetween for causing deformation thereof to enhance the gripping engagement between said jacket member and said cap member, thereby for shielding said fastener head for preventing access thereto without detectably damaging one or both said jacket member and said cap member.

4,621,231

TOROIDAL SENSOR COIL AND METHOD

Theodore M. Heinrich, and Lawrence W. Frost, both of Murrysville, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 19, 1984, Ser. No. 622,291
Int. Cl.[4] H01F *27/28, 5/00*
U.S. Cl. 324—142 **12 Claims**



1. A method of making an electrical sensor coil without winding, comprising the steps of:
(a) providing an elongated flexible insulating substrate having opposite sides, opposite edges, and opposite ends;
(b) applying an elongated electrical conductor onto at least one side of the substrate and extending substantially from one end to the other end with the conductor having longitudinal and transverse portions which latter portions are at generally equally spaced intervals;
(c) folding the substrate along each of a plurality of the transverse lines to form substrate sections; and
(d) bending the folded substrate into a cylindrical toroidal core having adjacent substrate sections disposed at acute angles to each other forming a star-like cross-section.

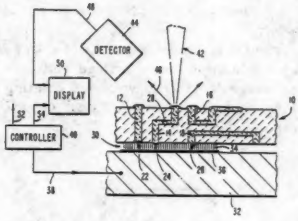
4,621,232

INSPECTION OF UNSINTERED SINGLE LAYER OR MULTILAYER CERAMICS USING A BROAD AREA ELECTRICAL CONTACTING STRUCTURE

Tai-Hon P. Chang, Chappaqua; Philip J. Coane, Mahopac; Fritz-Jurgen Hohn, Armonk; Walter W. Molzen, Jr., Patterson, and Arthur R. Zingher, Elmsford, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 267,321, May 26, 1981, abandoned.
This application May 15, 1984, Ser. No. 610,445
Int. Cl.[4] G01R *31/02*
U.S. Cl. 324—158 R **3 Claims**

1. A method of testing the physical continuity of metallic paste within unsintered ceramic structures having non-planar surface topography and containing exposed metallic paste lines and vias, comprising the steps of:
temporarily contacting a surface region of an unsintered ceramic structure containing metallic paste lines and vias with a detachable electrode which conforms to topographical contours in the contacted surface,
said contacted surface region having many exposed metallic paste regions and a non-planar surface topography;
said electrode contacting all of said exposed paste regions underlying said electrode without damaging any contacted paste lines or vias,
scanning a different surface are of said ceramic structure with an electron beam,
said different surface area being separate from said surface area contacting said electrode;
said different surface area having exposed paste regions, at least some of which have physical continuity with paste regions contacting said electrode; and



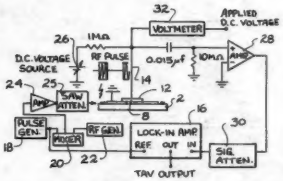
sensing current collected by said electrode as said electron beam scans said different surface area,
whereby paste continuity between each of said exposed paste regions at said different surface area and said eletrode thereby is individually tested by sensing the current collected by said electrode when each of said exposed paste regions at said different surface area is irradiated by said electron beam.

4,621,233

NON-DESTRUCTIVE TESTING OF SEMICONDUCTORS USING ACOUSTIC WAVE METHOD

Bijan Davari, Troy, and Pankaj Das, Cohoes, both of N.Y., assignors to Rensselaer Polytechnic Institute, Troy, N.Y.

Filed Jan. 13, 1984, Ser. No. 570,496
Int. Cl.[4] G01R *31/32, 29/22*
U.S. Cl. 324—158 R **4 Claims**



3. A device for measuring at least one surface property of a first surface of a semiconductor material comprising:
a layer of piezoelectric material having a surface;
an interdigital transducer made of electrically conducting mateial disposed on the surface of the piezoelectric material;
a layer of thin metal film on the surface of the piezoelectric material defining a window exposing at least a portion of the surface of the piezoelectric material, the metal film being out of contact with said transducer;
a wafer of semiconductor material having the first surface for which the at least one surface property is to be measured, disposed over said window with the first surface of the wafer facing the exposed surface of the piezoelectric material, the wafer having a second opposite surface;
a conductive electrode adjacent said second surface of said wafer;
a ground connection connected to said metal film;
an rf pulse generator connected to said interdigital transducer for providing a pulse of rf energy to said interdigital transducer to produce a surface acoustic wave in the

piezoelectric material which propagates across said piezoelectric material surface and said window to produce a perpendicular electric field which extends into the first surface of said wafer;

dc voltage means having one terminal connected to ground connection of said metal film on the piezoelectric surface and an other terminal connected to said conductive electrode on the second surface of said wafer for producing a dc voltage to alter a surface potential at the first surface of said wafer;

voltage measuring means connected to said dc voltage means for measuring the dc voltage; and

transverse acoustical electric voltage measuring means for measuring the transverse acoustical electrical voltage across the semiconductor wafer.

4,621,234

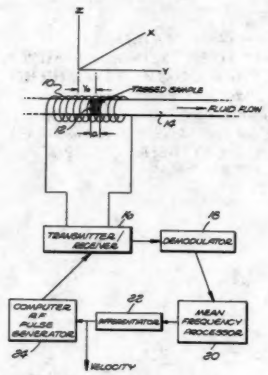
PULSED NMR FLOW MEASUREMENT

Arvind Caprihan, Albuquerque, N. Mex., assignor to Lovelace Medical Foundation, Albuquerque, N. Mex.

Filed Dec. 5, 1983, Ser. No. 557,980

Int. Cl.⁴ G01V *3/00*

U.S. Cl. 324—306 **15 Claims**



1. A method for measuring flow of fluid in a conduit, the atomic nuclei of at least one component of said fluid displaying a nuclear magnetic moment and angular momentum, comprising:

establishing a first static, substantially homogenous axial magnetic field within said conduit having a gradient along the direction of flow of said fluid sufficient to induce nuclear paramagnetization in said fluid;

applying to a region within said conduit a radio frequency pulse having a first frequency about equal to the Larmor precession frequency of the nuclei of said element at the field intensity of said first magnetic field, whereby to alter the nuclear magnetization within a bolus of said fluid to thereby tag said bolus with respect to fluid preceding and following said bolus;

measuring the frequency of nuclear magnetic resonance of the atomic nuclei of said element in said bolus over predetermined periods of time to obtain for each period of time the mean instantaneous frequency of said nuclear magnetic resonance; and

deriving the velocity of said fluid from the rate of change of said mean instantaneous frequency.

4,621,235

METHOD OF AND DEVICE FOR DETERMINING A NUCLEAR MAGNETIZATION DISTRIBUTION IN A REGION OF A BODY

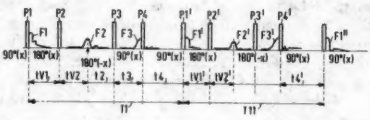
Cornelis M. J. van Uijen, and Johannes H. den Boef, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 25, 1984, Ser. No. 614,001

Claims priority, application Netherlands, Jun. 7, 1983, 8302017; Mar. 29, 1984, 8400991

Int. Cl.⁴ G01R *33/20*

U.S. Cl. 324—307 **15 Claims**



1. A method of determining a nuclear magnetic distribution in a region of a body comprising the steps of:

generating a steady, homogeneous magnetic field in said region,

generating a first high-frequency electromagnetic pulse so as to cause a precessional motion of the magnetization of nuclei in the body to thereby generate a resonance signal,

extracting a plurality of signal samples from said resonance signal during a measurement period which is divided into a plurality of sampling intervals,

generating a high-frequency 180° pulse so as to produce a nuclear spin echo signal,

generating a further high-frequency excitation pulse during said echo signal, and thereafter repeating said first pulse generating and said signal sample extracting steps so as to obtain a group of said signal samples from which an image of the distribution of the induced nuclear magnetization is determined.

4,621,236

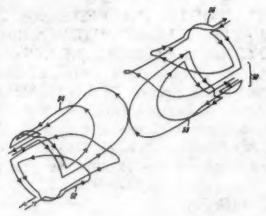
CYLINDRICAL ELECTROMAGNET FOR AN NMR IMAGING SYSTEM

Klaus Halbach, Berkeley, Calif., assignor to Field Effects, Inc., Acton, Mass.

Filed Feb. 11, 1985, Ser. No. 700,036

Int. Cl.⁴ G01R *33/12*

U.S. Cl. 324—319 **11 Claims**



1. A cylindrical electromagnet having a central plane and extending about a magnet axis perpendicular to said central plane, said magnet producing a transverse magnetic field directed parallel to a transverse axis which is perpendicular to said magnet axis, the variation of said transverse magnetic field in the direction parallel to said magnet axis being proportional to the distance from said central plane in the direction of said magnet axis, said magnet also producing an axial magnetic field directed parallel to said magnet axis, the variation of said axial field being proportional to the distance from said magnet axis in the direction of said transverse axis, said magnet comprising

a plurality of current-carrying conductors disposed such that the current density in each of said conductors in an azimuthal direction is proportional to the sine of the azimuthal angle ϕ, and

said conductors being further disposed such that the current density in each of said conductors in the direction along said magnet axis is proportional to the distance from said central plane along said magnet axis multiplied by the cosine of the azimuthal angle ϕ.

4,621,237

RADIOFREQUENCY TRANSDUCER AND METHOD OF USING SAME

William E. Timms, Eynsham, United Kingdom, assignor to Oxford Research Systems Limited, Coventry, England

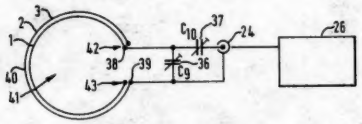
PCT No. PCT/GB83/00160, § 371 Date Feb. 27, 1984, § 102(e) Date Feb. 27, 1984, PCT Pub. No. WO84/00214, PCT Pub. Date Jan. 19, 1984

PCT Filed Jun. 27, 1983, Ser. No. 589,104

Claims priority, application United Kingdom, Jun. 28, 1982, 8218690

Int. Cl.⁴ G01R *33/20*

U.S. Cl. 324—322 **17 Claims**



1. A radio frequency transducer comprising a radio frequency transmission line formed in configuration including at least one loop, said transmission line comprising at least first and second elongate conductors spaced by dielectric material, the first and second conductors taking the form of strips of conducting laminate provided on opposite sides of a dielectric panel.

connection means adapted for connecting the transmission line to a radio frequency source or receiver, the connection means comprising first connection means for the said first conductor and second conduction means for the said second conductor,

the connection means for the first conductor being provided at one end of the loop and the connection means for the second conductor being provided at the other end of the loop.

4,621,238

DIFFERENTIAL AMPLIFIER CIRCUIT HAVING CONTROLLABLE GAIN

Josef Fenk, Eching, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

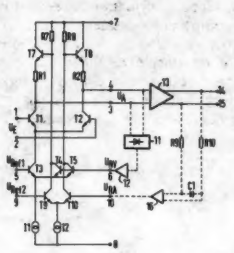
Filed Jun. 6, 1985, Ser. No. 742,115

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1984, 3421241

Int. Cl.⁴ H03G *3/30*; H03F *3/45*

U.S. Cl. 330—254 **14 Claims**

1. Differential amplifier circuit, comprising a first differential amplifier stage formed of a pair of transistors having inputs and output circuits, said inputs of said transistor pair of said first differential amplifier stage forming an input of the amplifier circuit, load resistors having circuits connected to said output circuits of said pair of transistors of said first differential amplifier stage, a circuit output connected to said load resistors, at least two further differential amplifier stages having first and second circuits, a reference input connected to said first circuits of said further differential amplifier stages, a gain control input connected to said second circuits of said further differential amplifier stages, at least said first circuits of said further differential amplifier stages being connected to said output circuits of said pair of transistors of said first differential amplifier stage, said second circuits of said further differential



amplifier stages driving a control stage connected to said load resistor circuits for maintaining a constant d-c voltage level in said circuit output.

4,621,239

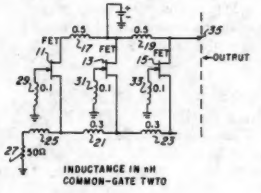
GALLIUM ARSENIDE TRAVELLING-WAVE TRANSISTOR OSCILLATORS FOR MILLIMETER WAVE APPLICATIONS

Hua Q. Tserng, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 29, 1985, Ser. No. 717,741

Int. Cl.⁴ H03B *5/18, 5/24*

U.S. Cl. 331—99 **14 Claims**



1. A travelling-wave oscillator which comprises:

(a) a plurality of semiconductor devices formed of a group III–V material, each device having gate, source and drain electrodes,

(b) first inductive means coupled between the drain electrodes of each of said devices,

(c) second inductive means coupled between the source electrodes of each of said devices,

(d) a source of reference voltage,

(e) a plurality of inductors, each inductor coupled between each of said gate electrodes and said source of reference voltage,

(f) output means coupled to the drain electrode of one of said devices, and

(g) a source of power connected to said first inductive means.

4,621,240

TEMPERATURE COMPENSATED OSCILLATOR FOR RASTER SCANNED VIDEO DISPLAY

Robert J. Alvord, Elmwood Park; Robert Amberg, Westmont; Michael T. Fegan, Chicago, and Joseph Kadlec, Berwyn, all of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Jun. 28, 1985, Ser. No. 750,349

Int. Cl.⁴ H03K *3/281*

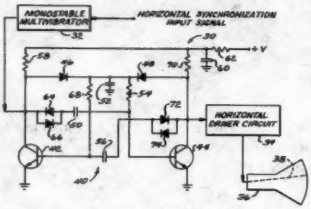
U.S. Cl. 331—113 R **11 Claims**

1. In a horizontal deflection circuit responsive to a synchro-

nization signal for providing horizontal drive signals to deflection circuitry for horizontally scanning an electron beam across a faceplate of a raster scanned video display in timed relation with video information presented on said video display, a temperature compensated oscillator comprising:

first and second timing networks respectively directly and indirectly responsive to the synchronization signal for producing first and second turn-on signals in timed relation with the synchronization signal;

first and second temperature-dependent conducting means



respectively coupled to said first and second timing networks and alternately rendered conductive in said timed relation with the synchronization signal by said first and second turn-on signals, respectively, for providing horizontal drive signals to the deflection circuitry; and

temperature compensating means including temperature responsive bi-directional conducting means coupled to said first timing network for controlling said first turn-on signal wherein the operation of said first conducting means is substantially independent of the operating temperature of the oscillator.

4,621,241

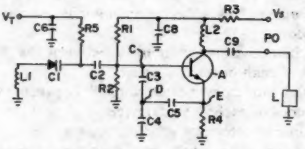
WIDE RANGE ELECTRONIC OSCILLATOR

Joseph H. Kiser, Aurora, Colo., assignor to Vari-L Company, Inc., Denver, Colo.

Filed Jun. 7, 1985, Ser. No. 742,194

Int. Cl.[4] H03B *5/00*

U.S. Cl. 331—117 R **29 Claims**



1. A wideband electronic oscillator having an improved performance at higher frequencies comprising:

a resonant tank circuit including an inductance means, a main capacitance, and two feedback signal dividing capacitors connected in series with one another for producing oscillations;

a signal amplifier for overcoming losses to sustain oscillations in the tank circuit, said amplifier having an input and a feedback output, said amplifier being connected in a feedback loop for said tank circuit which includes one of said feedback signal dividing capacitors;

a first impedance connected between said feedback output and ground; and

a second impedance including a reactance connected between said feedback signal dividing capacitors and said feedback output for maintaining the phase shift of a feedback signal produced in said feedback loop at the input and output of said amplifier at substantially zero degrees and for reducing noise components near the oscillating frequency, said second impedance having a high value at low frequencies in relation to the first impedance so that the low frequency noise components are dissipated in said first impedance,

said second impedance reducing the loading of said first impedance on said tank circuit to raise the Q and thereby improve the stability of the oscillations in said tank circuit.

4,621,242

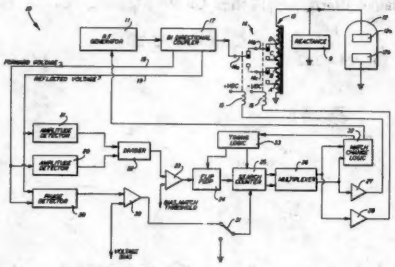
R.F. IMPEDANCE MATCH CONTROL SYSTEM

C. Earle Theall, Jr., Weston; Hans G. Ludwig, Norwalk, both of Conn., and Michael J. Gustin, Bedford Hills, N.Y., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Mar. 19, 1984, Ser. No. 590,933

Int. Cl.[4] H03H *7/40*

U.S. Cl. 333—17 M **8 Claims**



1. In a system for supplying R.F. power to a load, an automatic impedance matching system comprising;

R.F. power source means;

bidirectional coupler means connecting said R.F. power source means to the load, said bidirectional coupler means also providing separate output voltages proportional to incident and reflected power, respectively;

autotransformer means connected between the load and said bidirectional coupler means;

divider means connected to said bidirectional coupler means for receiving said output voltages proportional to incident and reflected power and providing an output voltage proportional to the reflection coefficient;

a source of threshold voltage;

comparator means connected to receive the outputs of said divider means and said source of threshold voltage and providing an output voltage indicative of a mismatch when said voltage proportional to the reflection coefficient is greater than said threshold voltage;

first flip-flop means connected to said comparator means and providing output pulses each having a positive edge and a negative edge in response to said output voltage from said comparator means indicative of a mismatch,

a search counter having a binary output,

first switch means having a first position connecting said first flip-flop means to an input to said search counter for applying said pulses from said first flip-flop means to change the count of said search counter by one on each occurrence of a pulse from said first flip-flop means;

second switch means coupling said autotransformer means to said bidirectional coupler means;

solenoid means coupled to said second switch means;

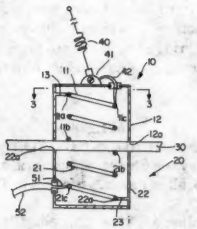
circuit means connected between said search counter means and said solenoid means energizing said solenoid means to actuate said second switch means for changing the turns ratio of said autotransformer means when the count in said search counter is changed on occurrence of a pulse from said first flip-flop means.

4,621,243

TRANSMISSION CHANNEL COUPLER FOR ANTENNA

Takuji Harada, Hiratsuka, Japan, assignor to Harada Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 27, 1985, Ser. No. 716,826
Claims priority, application Japan, Dec. 30, 1984, 59-280846
Int. Cl.[4] H01P 5/02, 7/00; H01Q 1/27
U.S. Cl. 333—24 R 15 Claims



1. A transmission channel coupler for VHF or UHF antenna for coupling electromagnetic energy through an insulated material comprising:

an undergrounded outer conductor having first and second ends;

a helical conductor having first and second ends provided within and substantially coaxial with said outer conductor, said first end of said helical conductor being electrically connected to a point of an inner wall of said outer conductor which is adjacent said first end of said outer conductor, said helical conductor and said outer conductor being arranged and configured such that a ratio of an inside diameter of the outer conductor to an outside diameter of said helical conductor is 1.1–2.0;

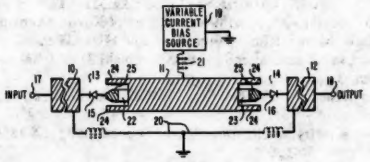
a printed circuit board having a circular conductive pattern provided thereon, said printed circuit board being provided adjacent said second end of said outer conductor and having said circular conductive pattern electrically connected to said second end of said helical conductor, said circular conductive layer further being provided within said outer conductor.

4,621,244

BROADBAND VARIABLE ATTENUATOR USING TRANSMISSION LINES SERIES COUPLED BY ADJUSTABLE PIN DIODES

George L. Heiter, Andover, Mass., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 17, 1984, Ser. No. 611,331
Int. Cl.[4] H03H 7/25; H01P 1/22
U.S. Cl. 333—81 A 13 Claims



1. A broadband variable attenuator comprising:

a first transmission line section comprising a first and a second end for receiving an input signal at the first end and directly propagating the input signal to the second end;

a second transmission line section comprising a first end disposed adjacent the second end of the first transmission line section in a non-contacting relationship, and a second end for providing an output signal;

a variable bias source comprising first and second terminals inductively connected to the first and second transmission lines, respectively, for selectively providing any one of a plurality of bias values between the second end of the first transmission line and the first end of the second transmission line; and

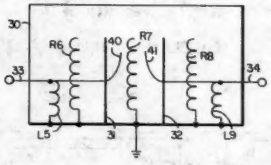
a PIN diode interconnecting the second end of the first transmission line section and the first end of the second transmission line section, the PIN diode being responsive to the selectively provided one of the plurality of bias values across the diode to cause (a) the diode to be in the non-conductive state and cause substantially a total reflection of an input signal back to the first end of the first transmission line when the selected bias value across the diode is below a first predetermined value, (b) the diode to be in a fully conductive state and cause substantially a complete transmission of an input signal through the PIN diode to the second end of the second transmission line when the selected bias value across the diode is above a second predetermined value, and (c) the diode to be in a low forward bias state to cause a selective amount of the combination of partial reflection of the input signal back to the first end of the first transmission line and partial transmission of the input signal through the PIN diode to the second end of the second transmission line when the selected bias values across the diode is selectively disposed between the first and second predetermined values, the three states of the PIN diode providing a variable amount of attenuation of the energy of the input signal before reaching the second end of the second transmission line.

4,621,245

INTERMEDIATE FREQUENCY FILTER FOR A DBS RECEIVER

Pierre Dobrovolny, North Riverside, and Dominic J. Nicoletto, Melrose Park, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed May 8, 1984, Ser. No. 608,329
Int. Cl.[4] H01P 1/20; H03H 7/09, 7/12
U.S. Cl. 333—202 11 Claims



1. A high frequency filter comprising:

three resonators, each including an inductive portion;

capacitance means coupling said three resonators to form a filter having an input resonator, an output resonator and an intermediate resonator;

an input connection to said input resonator;

an output connection to said output resonator; and

coupling means coupling both said input resonator and said output resonator to said intermediate resonator for sharpening the frequency pass band of said filter.

4,621,246

POLARIZED ELECTROMAGNET RELAY

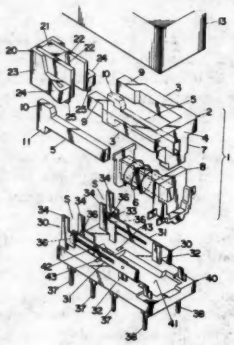
Mitsuki Nagamoto, Tsu; Atsushi Nakahata, Mie, and Takuo Kubota, Tsu, all of Japan, assignors to Matsushita Electric Works, Ltd., Japan

Filed Jul. 25, 1985, Ser. No. 759,103

Claims priority, application Japan, Jul. 25, 1984, 59-113906[U]; Jul. 25, 1984, 59-113907[U]; Dec. 12, 1984, 59-275925

Int. Cl.[4] H01H *51/22*

U.S. Cl. 335—78 6 Claims



1. In a polarized relay comprising, in combination, an electromagnet block, an armature block with a permanent magnet responding to energization of the electromagnet block to reciprocate between two operating positions, at least one contact assembly which is actuated by the reciprocating armature for contact switching, and a base plate for mounting thereon said electromagnet block, armature block and the contact assembly, said electromagnet block including a generally E-shaped yoke with a pair of opposed side legs and a center leg projecting from a web member thereof, said center leg defining a core around which an excitation coil is wound, the improvement comprising the core being displaced from the plane of the opposed side legs of the yoke toward the base plate and that said contact assembly is disposed on the side of the core so as to be received in the space left between the side leg of the yoke and the base.

4,621,247

HOUSING FOR CIRCUIT BREAKER

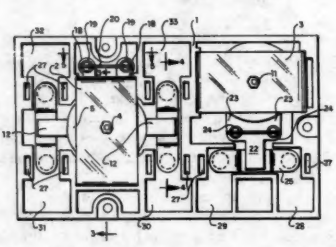
Anton Happach, Munich, Fed. Rep. of Germany, assignor to Schaltbau GmbH, Munich, Fed. Rep. of Germany

Filed Aug. 21, 1984, Ser. No. 642,944

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1983, 3330666

Int. Cl.[4] H01H *45/04*

U.S. Cl. 335—202 5 Claims



1. In a circuit breaker configuration wherein the circuit breaker is provided with a magnetic drive and armature for operating a movable contact bridge cooperating with stationary contacts and further having return spring means and contact pressure providing springs, the improvement comprising:

a two part casing comprising a first casing part provided with compartments receiving said magnetic drive, said contact bridge, and said return spring; and

a second casing part receiving said stationary contacts; and

said two casing parts being interconnected so that said stationary contacts face said movable contact bridge, and said contacts, bridge and drive are protectively contained inside the casing being completely closed.

4,621,248

AMORPHOUS CUT CORE

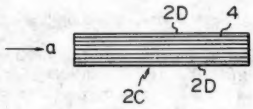
Masao Shigeta, Urayasu; Shotatsu Sugenoya, and Tsutomu Cho, both of Ichikawa, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Jun. 18, 1984, Ser. No. 621,358

Claims priority, application Japan, Jun. 16, 1983, 58-108461

Int. Cl.[4] H01F *27/24*

U.S. Cl. 336—178 1 Claim



1. An amorphous cut core having a predetermined shape and comprising:

a wound body of a thin strip of magnetic amorphous alloy, said wound body having wound inner and outer surfaces including an open gap between layers of the wound thin strip of magnetic amorphous alloy, and a cut surface being formed across the wound thin strip of magnetic amorphous alloy,

said predetermined shape being defined by said wound inner and outer surfaces, characterized in that the cut surface has polishing marks in a direction substantially parallel to a major surface thereof, the thickness of the thin strip of magnetic amorphous alloy, at the cut surface of the wound thin strip is 1.2 times or less the thickness of the thin strip of magnetic amorphous alloy at the remaining non-cut portion of the wound thin strip, and the cut core has no trapped acid in the gaps between the layers of strips of magnetic amorphous alloy.

4,621,249

MOISTURE SENSITIVE ELEMENT

Fusaoki Uchikawa; Morihisa Takeuchi; Kozo Shimamoto; Kunihiko Miyao; Kimio Momiyama, and Hisao Watarai, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 432,953, Sep. 29, 1982. This application Jan. 31, 1985, Ser. No. 696,795

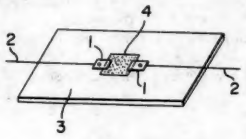
Claims priority, application Japan, Sep. 30, 1981, 56-155961; Sep. 30, 1981, 56-155962

Int. Cl.[4] H01C *7/00;* G01N *27/12*

U.S. Cl. 338—35 9 Claims

1. A moisture sensitive element, having as a main element a metal oxide bound by a silicon polymer which has been thermally decomposed, said moisture sensitive element comprising in sequence an electrically insulating base, a moisture sensitive section that changes its electrical resistance according to the humidity of the atmosphere, and a pair of electrodes formed in a predetermined position on said moisture sensitive section,

said moisture sensitive section containing tiny particles of a moisture sensitive, electrically resistant material that are bound



to each other by the product that remains after the thermal decomposition of a polymerized organic silicon compound.

4,621,250

ROTARY POTENTIOMETER, PARTICULARLY FOR MEASURING ANGULAR POSITION

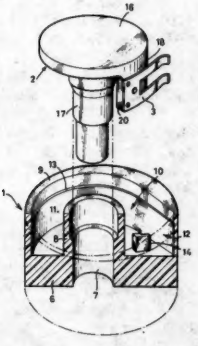
Gilbert Echasseriau; Philippe LeFevre, and Patrice Oliveau, all of Toulouse, France, assignors to Renix Electronique, Toulouse, France

Filed Feb. 20, 1985, Ser. No. 703,489

Claims priority, application France, Feb. 28, 1984, 84 03006

Int. Cl.[4] H01C *10/30*

U.S. Cl. 338—162 **13 Claims**



1. A rotary potentiometer comprising:

a case;

a curved electrically resistive track fixed to said case, said track defining a cylindrical surface;

a rotor mountable in said case for rotation about an axis parallel to said track;

an elastic wiper carried by said rotor, said wiper including an end portion radially engageable, with respect to said axis, with a first circumferential portion of said track when said rotor is mounted in said case; and

means for biasing said rotor into a rest angular position with respect to said axis in which said wiper end portion engages with said first circumferential portion,

wherein said case is shaped such that said track defines a second circumferential portion with which said wiper end portion is not engageable during mounting of said rotor in said case, whereby said rotor is introduced along the direction of said axis into said case without engagement between said end portion and said second circumferential portion.

4,621,251

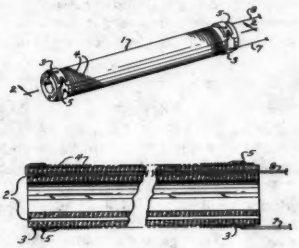
ELECTRIC RESISTANCE HEATER ASSEMBLY

Richard A. Keefe, Wilmette, Ill., assignor to North American Philips Corp., New York, N.Y.

Filed Mar. 28, 1985, Ser. No. 717,300

Int. Cl.[4] H05B *3/40*; H01C *1/148, 3/20*

U.S. Cl. 338—302 **3 Claims**



1. A heater assembly consisting essentially of a ceramic tube through whose wall there is at least one longitudinal conduit extending from one terminus to the other terminus of said tube, compressions bands tightly fitted on the outer surface of the tube and placed transversely to its long axis, each of said bands being a resilient spring-temper split band of smaller diameter than the tube so as to be self-retained thereon by compressive stress, a first band being adjacent to one terminus of the tube and a second band being adjacent to the other terminus, resistance wire tightly wound around the tube between said bands with one terminus of said wire welded to the first band and the other terminus of the wire welded to the second band, a first electrical lead welded to the first band, a second electrical lead welded to the second band and extending through the conduit in the wall of the tube to exit at the terminus adjacent to the first band, each of said electrical lead welds being at a point on the band separate from the point of welding of the resistance wire.

4,621,252

SAFETY APPARATUS

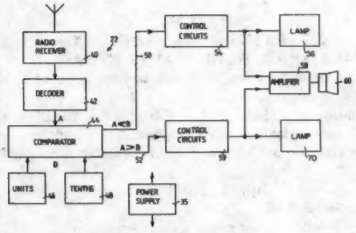
David G. Johns, 29 Porter Street, Eltham, Victoria; Kieran J. Donlon, 44 Torrens Street, Werribee, Victoria, and Manfred E. Braun, 27 Armstrong Street, West Sunshine, Victoria, all of Australia

Filed Sep. 21, 1984, Ser. No. 652,972

Claims priority, application Australia, Dec. 23, 1983, 22921/83

Int. Cl.[4] B60Q *1/00*; G08G *1/16*

U.S. Cl. 340—61 **21 Claims**



1. A method for indication whether a vehicle can pass under an obstruction, comprising transmitting a signal from the vicinity of the obstruction, said signal containing encoded information as to the clearance height of the obstruction, detecting said signal with a detector on said vehicle as said vehicle ap-

proaches the obstruction, comparing the said information contained in the signal with prestored information as to the height of said vehicle and causing indicator means of the vehicle to be actuated to provide a warning indication to a driver of the vehicle in the event that the comparison indicates that said height of said vehicle is not less than the clearance height of the obstruction and causing said indicator means to be actuated to provide an indication different to said warning indication in the event that the comparison indicates that the height of said vehicle is less than the clearance height of the obstruction.

4,621,253
WARNING LIGHT

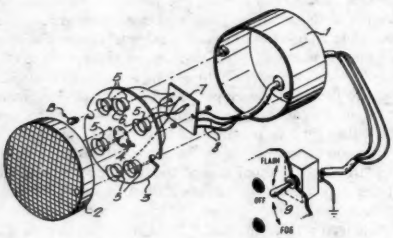
Keith J. Pillinger, and David S. Griffith, both of Bristol, England, assignors to Rotalight Limited, Bristol, England

Filed Mar. 7, 1983, Ser. No. 473,148

Claims priority, application United Kingdom, Mar. 5, 1982, 82-06476; Aug. 7, 1982, 82-22831

Int. Cl.[4] B60Q *1/00*

U.S. Cl. 340—84 **20 Claims**



1. A hazard warning light system comprising:
a housing including a front light-transmitting face;
a support plate mounted within said housing, said support plate having means for mounting a plurality of light bulbs therein, said means disposed generally on the perimeter of a circle;
a plurality of pairs of light bulbs received by said light bulb mounting means of said support plate;
the light bulbs of each pair mounted generally diametrically opposite to each other on said circle perimeter; and
means for energizing said light bulbs so that both light bulbs of each pair are switched on and off together, and so that the pairs of light bulbs are energized in sequence, so that both bulbs of each pair are visible at the same time through the front light-transmitting face and give the illusion of a rotating light source.

4,621,254
APPARATUS AND METHODS FOR ANALOGUE-TO-DIGITAL CONVERSION

R. Allan Belcher, Swansea, United Kingdom, assignor to Burr-Brown Corporation, Tucson, Ariz.

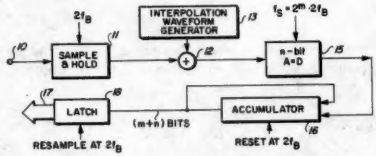
Continuation-in-part of Ser. No. 630,977, Jul. 16, 1984. This application Jul. 23, 1984, Ser. No. 633,092

Claims priority, application United Kingdom, Jul. 29, 1983, 8320534

Int. Cl.[4] H03M *1/12*

U.S. Cl. 340—347 M **15 Claims**

1. An n+m bit analog-to-digital converter circuit including an analog input and n+m output bits, n and m being integers, the analog-to-digital converter circuit comprising in combination:
(a) a sample and hold circuit having an input terminal receiving an analog input signal, a control input terminal, and an output terminal, and means for applying a first sampling signal having a first frequency to the control input terminal to cause the sample and hold circuit to produce a sampled analog signal on the output terminal;
(b) an interpolation signal generating circuit producing a periodic interpolation signal having a second frequency that is 2^m times the first frequency;
(c) a combining circuit combining the interpolation signal and the sampled analog signal to produce a combined signal having 2^m steps in each period of the sampling signal;



(d) an n-bit analog-to-digital converter receiving the combined signal and converting it to n-bit digital numbers in response to a conversion control signal of the second frequency; and
(e) digital time averaging circuit means for accumulating the n-bit digital numbers produced during each period of the first frequency and averaging the accumulated total thereof over that period to produce an n+m bit digital number representative of the analog input signal.

4,621,255
METHOD AND APPARATUS FOR ANALOG-TO-DIGITAL CONVERSION

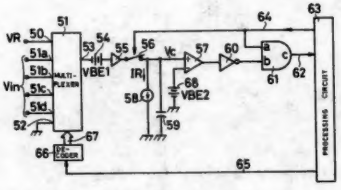
Minoru Takahashi; Koichi Kano, both of Hyogo, and Kan Otsuka, Aichi, all of Japan, assignors to Fujitsu Ten Limited, Hyogo and Toyota Jidosha Kabushiki Kaisha, Aichi, both of, Japan

Filed Oct. 22, 1984, Ser. No. 663,460

Claims priority, application Japan, Oct. 20, 1983, 58-197354

Int. Cl.[4] H03K *13/02*

U.S. Cl. 340—347 AD **12 Claims**



1. An analog-to-digital converting method comprising the steps of:
actuating a processing circuit to transmit a start signal to a switch to thereby render the switch conductive;
applying an analog voltage of input signal to a capacitor via the switch so as to electrically charge the capacitor until a value of charging voltage thereof reaches a specified value corresponding to a level of the input signal;
thereafter opening the switch by the start signal so as to cause the capacitor to discharge with a constant current;
leading out a level discriminating signal when a voltage of the capacitor decreases to a predetermined level in the course of discharging;
generating a stop signal by a logical operation of the start signal and the level discriminating signal; and
actuating the processing circuit to calculate a digital value corresponding to a time period from the time that the switch is opened to the time that the stop signal is gener-

ated so as to thereafter move to a subsequent processing operation.

4,621,256

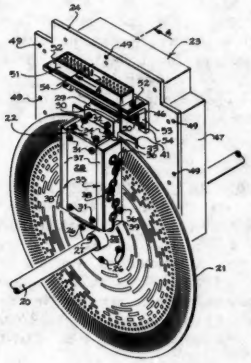
APPARATUS FOR MEASURING RATE OF ANGULAR DISPLACEMENT

Stanley J. Rusk, Los Altos Hills, Calif., assignor to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Division of Ser. No. 514,012, Jul. 15, 1983. This application Sep. 13, 1985, Ser. No. 775,983

Int. Cl.[4] H03K *13/18*

U.S. Cl. 340—347 P **7 Claims**



1. An apparatus for measuring rate of angular displacement of an object about an axis of rotation, said apparatus comprising:

(a) a source of illumination;

(b) means for detecting illumination emitted by said source, said detecting means including a plurality of photodetectors, each of said photodetectors generating a corresponding electrical signal in response to illumination incident thereon;

(c) a rotating plate for attachment to said object perpendicular to said axis of rotation, said rotating plate undergoing rotation corresponding to angular rotation of said object about said axis, said rotating plate having a plurality of annular tracks thereon, said tracks being at different radial distances from said axis, an outermost one of said tracks being aligned with a pair of said photodetectors, other ones of said tracks being aligned with corresponding other ones of said photodetectors, said rotating plate when attached to said object being disposed with respect to said source of illumination and said detecting means so that:

(i) an opaque portion of each of said tracks prevents illumination emitted by said source from reaching said detector means, and

(ii) a transparent portion of each of said tracks transmits illumination emitted by said source, the transparent portion of said outermost track comprising a plurality of elongate windows extending radially on said outermost track, said radially extending windows being equiangularly spaced around said outermost track;

(d) a stationary plate interposed between said rotating plate and said detecting means when said rotating plate is attached to said object, said stationary plate having a pair of elongate windows, ends of each of said elongate windows on said stationary plate being generally aligned with corresponding annular boundaries of said outermost track on said rotating plate, said stationary plate also having a plurality of other windows, said other windows on said stationary plate being aligned with corresponding other ones of said annular tracks on said rotating plate, said stationary plate substantially preventing illumination that is transmitted by said radially extending windows on said outermost track on said rotating plate from reaching any photodetectors of said detecting means other than said pair of photodetectors aligned with said outermost track on said rotating plate, said stationary plate also substantially preventing illumination that is transmitted by the transparent portion of any one of said other tracks on said rotating plate from reaching any photodetectors of said detecting means other than the corresponding one of said other photodetectors with which said one of said other tracks is aligned;

said pair of photodetectors that are aligned with said outermost track on said rotating plate comprising a first elongate photodetector and a second elongate photodetector disposed in quadrature, thereby establishing a condition in which:

(i) when one elongate window on said outermost track on said rotating plate arrives at a position with respect to a first one of said pair of elongate windows on said stationary plate at which substantially all of the illumination that is transmitted by said one elongate window on said rotating plate is incident upon said first elongate photodetector aligned with said outermost track on said rotating plate,

(ii) another elongate window on said outermost track on said rotating plate simultaneously arrives at a position with respect to a second one of said pair of elongate windows on said stationary plate at which only half of the illumination that is transmitted by said other elongate window on said rotating plate is incident upon said second elongate photodetector aligned with said outermost track on said rotary plate;

so that said first and second elongate photodetectors generate corresponding first and second electrical signals as said object undergoes angular displacement, each of said first and second electrical signals being of generally triangular waveform, said first and second electrical signals being substantially equal to each other in amplitude and frequency but being out of phase with respect to each other;

said other photodetectors of said detecting means that are aligned with corresponding other ones of said tracks on said rotating plate generating corresponding electrical signals as transparent portions of said other ones of said tracks arrive at positions with respect to corresponding ones of said other windows on said stationary plate at which illumination emitted by said source is incident upon said other photodetectors; and

(e) electronic means including:

(i) means for selecting which ever one of said first and second electrical signals generated by said first and second elongate photodetectors has an instantaneous value closer than the other of said first and second electrical signals to a mid-level amplitude value of said triangular waveform, and for inverting the selected one of said first and second electrical signals as necessary to provide correct polarity for producing an analog signal of generally triangular waveform that varies periodically as said object undergoes angular displacement, segments of said analog signal being substantially linear;

(ii) means for converting said substantially linear segments of said analog signal to fine-bit digital signals;

(iii) means for converting said electrical signals generated by said other photodetectors of said detecting means to coarse-bit digital signals;

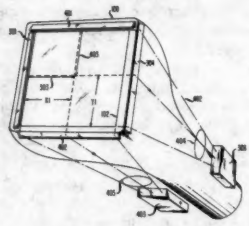
(iv) means for combining said fine-bit digital signals with said coarse-bit digital signals to obtain a digital measurement indicative of angular displacement of said object, said digital measurement having more bits obtained from said fine-bit digital signals than from said coarse-bit digital signals; and

(v) means for differentiating said digital measurement with respect to time to obtain a digital measurement of the rate of angular displacement of said object.

4,621,257
VIDEO DISPLAY TOUCH DETECTION DIGITIZER

Earl F. Brown, Piscataway, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 15, 1983, Ser. No. 523,000
Int. Cl.[4] G08C *21/00, 9/00*
U.S. Cl. 340—365 P 12 Claims



1. A video display for displaying light images generated by a raster scan signal, said video display comprising

a video circuit for controlling said raster scan signals including

means for generating a plurality of first signals wherein each first signal is associated with one or more picture elements of a horizontal scan line which occurs during a vertical blanking interval of said raster scan and

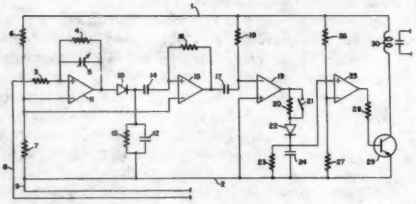
means for generating a plurality of second signals wherein each second signal occurs during a horizontal blanking interval of said raster scan and is associated with one or more horizontal scan lines of a displayed light image; and

a screen including an image display area for displaying light images in response to said raster scan signals and a coordinate display area for displaying discrete light sources in response to each of said first signals and said second signals.

4,621,258
PROXIMITY DETECTING APPARATUS

James P. Campman, P.O. Box 167, Transfer, Pa. 16154

Filed Aug. 22, 1983, Ser. No. 524,940
Int. Cl.[4] G08B *13/26*
U.S. Cl. 340—567 3 Claims



1. Apparatus for detecting an intrusion of an ambient electromagnetic field of an antenna, in the presence of radiation about said antenna that produce voltages on the antenna for providing an indication of the intrusion of said electromagnetic field;

an antenna capable of receiving said electromagnetic radiation and having a voltage generated therein by said radiation and wherein there is a change in level of voltage so generated which will be above or below the level where there is no intrusion,

a first amplifier for receiving said alternating current voltages at said levels and for producing a direct current voltage fluctuation at the same frequency as said alternating current voltage, but at a level elevated from that of the alternating current voltage;

filtering means for receiving said direct current fluctuations and for producing a constant direct current voltage at a level responsive to each change in level of the fluctuating direct current voltage;

a second amplifier receiving changes in level of said constant voltage to produce a negative or positive going square wave voltage pulse, constant in amplitude;

a third amplifier responsive only to the negative going square wave voltage pulses to produce a positive going square wave voltage pulse;

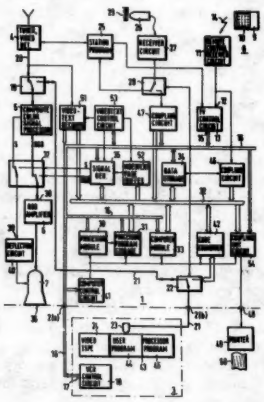
a fourth amplifier for receiving the output from said third amplifier having means there between whereby response of said fourth amplifier can be selectively made responsive to a single square wave voltage pulse or to a square wave voltage pulse produced after the occurrence of a plurality of square wave voltage pulses; and

means receiving the output of said fourth amplifier for triggering an indication of said intrusion.

4,621,259
CONSUMER ELECTRONICS EQUIPMENT COMBINATION CONSISTING OF A TELEVISION RECEIVER AND OF A VIDEO RECORDING AND/OR REPRODUCING APPARATUS

Charles Schepers, Karlsruhe, and Wolfgang Schröder, Pforzheim, both of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 18, 1983, Ser. No. 476,694
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1982, 3210893
Int. Cl.[4] G09G *1/00*
U.S. Cl. 340—707 12 Claims



1. An improved consumer electronics equipment combination including a television receiver containing a control bus for control instructions and selecting information, an input device with a keyboard, a television control circuit connected to the control bus for adjusting the operating states of the television receiver selected by means of the input device, a data and address bus with a data storage connected thereto, and a character generator capable of being optionally connected to the input of a video signal amplifier circuit for the picture tube, and with a video recording and reproducing apparatus containing an interchangeable video information storage medium capable of being scanned, which is connected to a record-reproduce connector of the television receiver, whose control circuit for adjusting its operating state is connected via the record-

reproduce connector to the control bus of the television receiver and whose video information input and output is connected to the video signal path of the television receiver via the record-reproduce connector, said improvement comprising:

the video signal path (21) of the recording and/or reproducing apparatus (3), extending via the record-reproduce connector (2) of the television receiver (1), includes a signal path changeover switch (22) having a first switch position which connects the signal path to the video signal path (20) of the television receiver and a second switch position which connects the video signal path of the recording and/or reproducing apparatus, via a code converter (42), to the data and address bus (32), the control bus (16) is connected to a computer control circuit (41) including means in response to a computer instruction appearing at the output of the input device (8) or of the television control circuit (13) for switching the television receiver into a computer operational state, the storage medium (43) of the video recording and/or reproducing apparatus (3) includes at least one selectable user program (44), and the computer operational state of the television receiver connects the input (38) of the video signal amplifier circuit (6) to the output of the character generator (35), connects a processor module (30) and a computer module (33) to the control bus (16) and the data and address bus (32), switches the signal path changeover switch (22) to its second switch position, and connects the data outputs of the input device to the data and address bus (32) via a coupling circuit (46).

4,621,260

THIN-FILM TRANSISTOR CIRCUIT

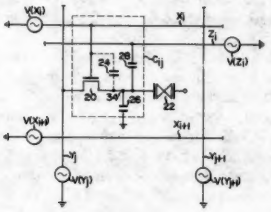
Kouji Suzuki, Urbana, Ill.; Mitsushi Ikeda, Yokohama, and Toshio Aoki, Hiratsuka, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 21, 1983, Ser. No. 563,754

Claims priority, application Japan, Dec. 25, 1982, 57-232815

Int. Cl.⁴ G09G *3/02*

U.S. Cl. 340—719 **10 Claims**



1. A thin-film transistor circuit for driving a display device, said circuit comprising:

a plurality of circuit components which control picture element display in unit picture element regions of said display device and which are arranged so as to form a matrix connected to data lines supplying an image signal and connected to address lines substantially crossing the data lines perpendicularly and supplying a first pulse signal to command the transmission of the image signal, each of said circuit components comprising,

(a) first capacitor means, provided in a unit picture element region of said display device, for receiving and temporarily storing the image signal,

(b) transfer gate means for performing a switching operation in response to the first pulse signal, thereby transferring the image signal to said first capacitor means, said transfer gate means including a thin-film transistor having a gate electrode connected to one of the address lines, a source electrode connected to said first capacitor means, and

(c) voltage compensating means connected to said first capacitor means, for preventing the image signal voltage across the first capacitor means from decreasing, said voltage compensating means including

signal generator means for generating a second pulse signal which is synchronized with the first pulse signal and has a polarity opposite to that of the first pulse signal,

second capacitor means provided between said signal generating means and a common contact of said first capacitor means and said transistor drain electrode, and

signal transmitting means for transmitting the second pulse signal to said second capacitor means, whereby the second pulse signal is supplied to said first capacitor means through said second capacitor means.

4,621,261

SYSTEM FOR MAKING A THERMO-ACTIVE DEVICE TEMPERATURE DEPENDENT

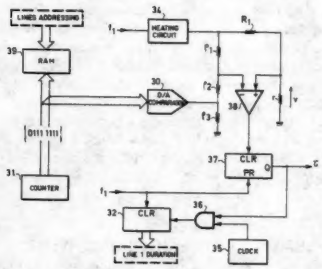
Robert Hehlen, Morangis, and Philippe Marcenac, Vitry, both of France, assignors to Thomson-CSF, Paris, France

Filed Dec. 19, 1983, Ser. No. 563,244

Claims priority, application France, Dec. 21, 1982, 82 21404

Int. Cl.⁴ H04Q *9/00*; G02F *1/137*; G09G *3/34*

U.S. Cl. 340—825.52 **10 Claims**



1. A temperature-dependent addressing system comprising:

a temperature-dependent device whose operation depends on the local heating applied to a layer of thermo-active material;

means for producing said local heating, including an assembly of electrodes and a means for passing a transitory electric current through one of said electrodes wherein said assembly of electrodes are situated in the immediate vicinity of said layer;

a memory means containing data pertaining to the thermal control of said electrodes;

a means for thermally addressing said one electrode as a function of said data wherein each one of said assembly of electrodes comprises a conducting material having a temperature coefficient;

a resistance r connected to the output of said electrode wherein at least a portion of said heating current passes through said resistance r, and whereby the potential difference v appearing at the terminals of said resistance r is proportional to the heating of said one electrode;

an analogue-digital converter which transmits for each of said heating electrodes, said potential difference v to one of the inputs of a comparator wherein the second input of said comparator receives said data relative to the thermal control of said electrode;

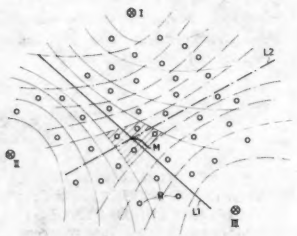
circuit means for adjusting the heating time of said electrode wherein said circuit means is connected to the output of said comparator.

4,621,262

METHOD OF AND A SYSTEM FOR REMOTE CONTROL OF ELECTRONIC EQUIPMENTS

Bengt G. Gustafson, Sigtuna, Sweden, assignor to U. S. Philips Corporation, New York, N.Y.

Filed Feb. 22, 1984, Ser. No. 582,425
Int. Cl.[4] G08C *19/00*; G10K *11/00*; H04B *1/59, 11/00*
U.S. Cl. 340—825.69 8 Claims



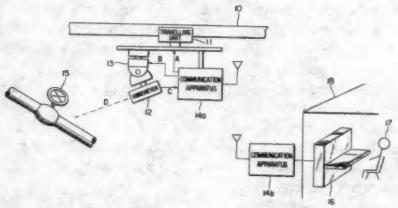
1. A method for the remote control of a plurality of electronic equipments which are spread across a geographical area and which each include a receiver and a transmitter, comprising transmitting from at least three geographically separated stations with known positions, activation signals having selected relative time positions; which signals are received and the relative time positions thereof are compared by said electronic equipments; activation of any electronic equipment being effected only if a predetermined criterion as regards the relative time positions of the activation signals received by such electronic equipment is fulfilled; the relative time positions of the transmitted activation signals being the criterion determining the area in which activation of any of said electronic equipments takes place, and the durations of such signals being the criterion determining the size of such area.

4,621,263

VIBRATION TELEMETERING SYSTEM

Toshio Takenaka, Kobe; Hiroshi Sugimoto, Toyonaka, and Yoshinobu Yamanaka, Kobe, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Jul. 30, 1984, Ser. No. 635,925
Claims priority, application Japan, Aug. 12, 1983, 58-148563
Int. Cl.[4] G08C *17/00*
U.S. Cl. 340—870.07 9 Claims



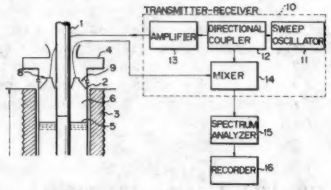
1. A vibration telemetering system comprising:
a travelling means for running along a predetermined inspection route;
an angle adjusting means mounted on said travelling means;
a vibrometer, mounted on said angle adjusting means, for measuring the vibration of an object in a non-contacting fashion, said vibrometer being moved by said adjusting means so that the detecting face of said vibrometer may be directed towards said object;
communication means for providing as outputs therefrom respective control signals for controlling said travelling means and said angle adjusting means and for receiving as a detection input signal a measured value from said vibrometer; and,
monitoring means for causing said communication means to develop said control signals and for receiving the measured value from said vibrometer through said communication means and for evaluating from the measured value if the state of said measured object is normal.

4,621,264

METHOD AND APPARATUS FOR MEASURING WATER LEVEL IN A WELL

Hirokatsu Yashiro, and Jiro Ohno, both of Kawasaki, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Sep. 4, 1984, Ser. No. 647,181
Claims priority, application Japan, Sep. 7, 1983, 58-164569
Int. Cl.[4] G01S *13/08*; G01V *3/08, 3/12*
U.S. Cl. 342—124 20 Claims



1. A method for measuring a water level in a well, such as a geothermal well, oil well, and the like, during drilling, said method comprising the steps of:
radiating an electromagnetic wave having a selected wavelength into a gap between a boring drill rod and a casing pipe by using a transmitting antenna;
receiving said electromagnetic wave reflected by a surface of said water level in said casing pipe by using a receiving antenna; and
measuring a distance between said surface of said water level and said receiving antenna based on the going and returning time of said electromagnetic wave,
wherein said selected wavelength of said electromagnetic wave to be used is longer than said gap distance between said boring drill rod and said casing pipe and said transmitting and receiving are performed by using a transverse electromagnetic (TEM) mode of electromagnetic wave.

4,621,265

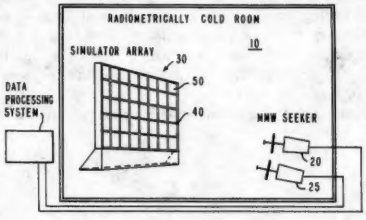
MILLIMETER WAVE PASSIVE/ACTIVE SIMULATOR ARRAY AND METHOD OF EVALUATING THE TRACKING CAPABILITY OF AN ACTIVE/PASSIVE TARGET SEEKER

Leland C. Buse, Bellevue, and George A. Eastman, Renton, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sep. 30, 1982, Ser. No. 430,352
Int. Cl.[4] G01S *7/40*
U.S. Cl. 342—169 15 Claims

9. An extended area target scene signature simulator array for simulating targets and the background terrain of the targets to facilitate tracking evaluations of an active/passive mode millimeter wave target seeker, the simulator array comprising:
a support;
an array of target elements mounted on said support, each said element having relective and absorptive properties;
an electronically actuable means for dynamically varying the reflective and absorptive properties of each said target

element such that the reflective and absorptive characteristics to incident electromagnetic energy of the array as a



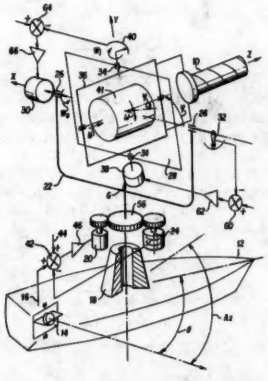
whole simulate the target and the background terrain of the target.

4,621,266

DEVICE FOR STABILIZING AND AIMING AN ANTENNA, MORE PARTICULARLY ON A SHIP

Jean C. Le Gall, Rue des Bruyéres la Clarké22700 Perros-Guirec, and Bernard Mathieu, Kergoustalen-Rospez, 22300-Lannion, both of France

Filed Sep. 13, 1984, Ser. No. 650,183
Claims priority, application France, Sep. 14, 1983, 83 14634
Int. Cl.[4] H01Q *3/00*; F41G *00/00*
U.S. Cl. 342—359 **12 Claims**



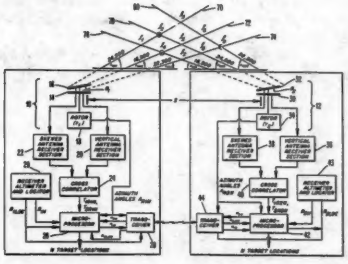
1. A device for stabilising and aiming an antenna on a ship, comprising, on a base, a mounting having bearing orientational means and supporting a gyroscopic assembly with two degrees of freedom, whose outer cardan transmission has an axis of rotation X perpendicular to the bearing axis, the inner cardan transmission having an axis of rotation Y at right-angles to the axis X and being connected to the antenna during aiming, wherein the gyroscopic assembly comprises a single flywheel of considerable, angular momentum in relation to the inertia of the antenna, each cardan transmission has a torque motor controlled by a loop whose feedback signal is provided by an orientation pick up of the other cardan transmission, and the means for orientation around the bearing axis are adapted to substantially provide the mean aiming of the antenna in bearing, and therefore to retain the gyroscopical assembly close to the canonical position.

4,621,267

BEARING INTERSECTION DEGHOSTING BY ALTITUDE COMPARISON SYSTEM AND METHODS

Edward R. Wiley, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 28, 1984, Ser. No. 655,706
Int. Cl.[4] G01S *3/02, 5/02*
U.S. Cl. 342—462 **16 Claims**



1. A system for detecting the location of a plurality of targets comprising:

(a) a first antenna system having first and second planes of receipt which are inclined a fixed angle (θ_1) from one another, said first antenna system being located along the line of intersection of said first and second planes, said first antenna system including means for sweeping said line of intersection at a known rate of sweep (τ_1), and means for measuring the instantaneous azimuth angle (A_{R1}) of said line of intersection;

(b) a second antenna system spaced apart from said first antenna system a known distance (S), said second antenna system having third and fourth planes of receipt which are inclined a fixed angle (θ_2) from one another, said second antenna system being located along the line of intersection of said third and fourth planes, said second antenna system including means for sweeping said line of intersection at a known rate of sweep (τ_2), and means for measuring the instantaneous azimuth angle (A_{R2}) of said line of intersection;

(c) means for determining the azimuth angles A_{R1N} and A_{R2N} for each of N targets which are within the range of said first and second antenna systems;

(d) means for measuring the delay T_{1R1N} between receipt by said first antenna system of signals in said first and then in said second planes which are emitted from each of said N targets and received directly by said first antenna system;

(e) means for measuring the delay T_{1R2N} between receipt by said second antenna system of signals in said third and then in said fourth planes which are emitted from each of said N targets and received directly by said second antenna system;

(f) means for measuring the delay T_{2R1N} between receipt by said first antenna system of signals in said first and then in said second planes which are emitted from said N targets and received by said first antenna system after being reflected from a remote surface;

(g) means for measuring the delay T_{2R2N} between receipt by said second antenna system of signals in said third and then in said fourth planes which are emitted from said N targets and received by said second antenna system after being reflected from a remote surface;

(h) means for measuring the heights R_{1H} and R_{2H} of said first and second antenna systems; and

(i) for calculating, for each of N azimuth angle A_{R1N}, the elevation (H_{1N}) of the target associated with that angle in response to θ_1, τ_1, T_{1R1N}, T_{2R1N}, and R_{1H}; means for calculating, for each of N azimuth angle A_{R2N}, the elevation (H_{2N}) of the target associated with that angle in

response to θ_2, τ_2, T_{1R2N}, T_{2R2N}, and R_{2H}; and means for selecting N of the N^2 possible locations of said targets as real target locations by determining the location of the intersection of lines defined by said azimuth angles A_{R1N} and A_{R2N} for which the associated elevations H_{1N} and H_{2N} are equal.

4,621,268

FLUID APPLICATION METHOD AND APPARATUS

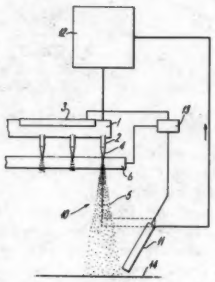
Michael R. Keeling, 19 Rockmill End, Willingham, Cambridgeshire, and David J. Langrick, 45 Water Lane, Oakington, Cambridgeshire, both of England

Filed Feb. 5, 1985, Ser. No. 698,599

Claims priority, application United Kingdom, Feb. 8, 1984, 8403304

Int. Cl.[4] G01D *15/18;* **B05B** *5/04*

U.S. Cl. 346—1.1 **17 Claims**



1. A method for applying a fluid in droplet form to a substrate, said method comprising:

feeding the fluid to a nozzle such that said fluid issues from said nozzle as a single substantially coherent jet following a single flight path directed toward a catching means by which the fluid is caught and prevented from being applied to the substrate;

applying a sufficiently large electrical charge to said single jet of fluid by means of a charge electrode so as to form a plurality of mutually repellant charge fluid droplets having flight paths which diverge from one another to form a generally conical spray of charged fluid droplets; and

causing relative movement between said catching means and said conical spray of charged droplets, thereby to prevent said charged droplets from being caught by said catching means and allowing said charged droplets to reach said substrate, when it is desired to deposit fluid on said substrate.

4,621,269

MAGNETIC RECORDING ARRANGEMENT FOR THERMOGRAPHIC PRINTING APPARATUS

Toshifumi Kimoto, Fujisawa; Teruhiko Itami, Atsugi; Akira Yamasawa, Ebina; Eiji Nishikawa, Atsugi, and Nobuo Nishimura, Sagamihara, all of Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 26, 1984, Ser. No. 665,301

Claims priority, application Japan, Feb. 15, 1984, 59-26578; Feb. 15, 1984, 59-26579

Int. Cl.[4] G11B *9/00;* **G03G** *15/02*

U.S. Cl. 346—74.4 **12 Claims**

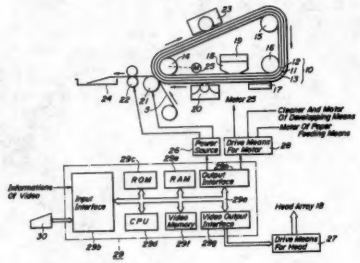
1. Magnetic recording arrangement for a thermomagnetographic device comprising:

a magnetic recording medium composed of a base layer, a first, ferromagnetic layer coated on a first side of the base layer, and a second, high-permeability magnetic layer coated on a second side of said base layer;

first magnetizing means for uniformly magnetizing said ferromagnetic layer in one predetermined direction to condition said first layer for forming a magnetic image thereon;

heating means positioned on the second side of said magentic recording medium for selectively heating said second, high-permeability magnetic layer in response to a video signal applied thereto to heat selected portions of said second layer sufficiently to convert such portions to a paramagnetic state;

second magentizing means applying to said second magnetic



layer a magnetic flux of a direction opposite to said one predetermined direction and forming a latent magnetic image on said first layer by reason of magnetic flux leakage from the heated paramagnetic portions of said second layer; and

developing means positioned on the first side of said magnetic recording medium for permitting a magnetic toner to adhere to the latent magnetic image;

whereby said developing means and said heating means are located on opposite sides of said magnetic recording medium.

4,621,270

MULTI-COLOR PRINTER

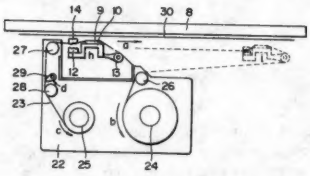
Minoru Mizutani, and Yoshihisa Fukurohata, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Jul. 24, 1985, Ser. No. 758,271

Claims priority, application Japan, Jul. 30, 1984, 59-157640

Int. Cl.[4] G01D *15/10*

U.S. Cl. 346—76 PH **9 Claims**



1. A multi-color printer, comprising:

an ink ribbon;

a longitudinally extending platen;

a guide shaft extending parallel to said platen;

a carriage mounted on said guide shaft for reciprocal longitudinal movement thereon in a first direction from an initial position to a turning-back position, and in a second direction opposite said first direction from said turning-back position to said initial position;

a recording head carried by said carriage for movement therewith in opposition to said platen, for transferring ink on said ink ribbon onto a sheet of recording paper during

movement of said carriage from said initial position to said turning-back position;

an ink ribbon cassette for housing the ink ribbon, including

a housing having an internal wall,

first and second ribbon spools rotatably mounted in said housing for winding said ink ribbon thereon, said ink ribbon being wound on said first and second spools and having a first portion thereof extending between said first and second spools between said recording head and said platen, said carriage including means for releasably fixedly engaging said first portion of said ink ribbon to said carriage to carry said first portion of said ink ribbon therewith, and

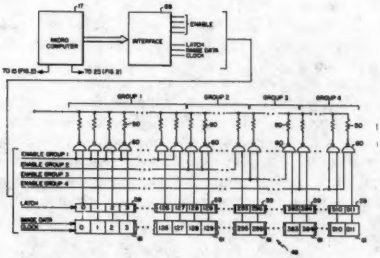
means, including a stopper mounted in said housing so as to be releasably fixedly engagable with a second portion of said ink ribbon, for pressing said second portion of said ink ribbon against said internal wall with said stopper to fix said second portion of said ink ribbon with respect to said internal wall; and

means for controlling said stopper to fixedly engage said second portion of said ink ribbon and controlling one of said first and second spools to rotate, when said carriage is moved longitudinally while released from said first portion of said ink ribbon, and for controlling said stopper to release from said second portion of said ink ribbon and controlling both of said first and second spools to rotate, when said carriage is moved longitudinally while fixedly engaged with said first portion of said ink ribbon.

4,621,271
APPARATUS AND METHOD FOR CONTROLLING A THERMAL PRINTER APPARATUS

Scott A. Brownstein, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 23, 1985, Ser. No. 778,960
Int. Cl.[4] G01D *15/10*
U.S. Cl. 346—76 PH **7 Claims**



1. In a thermal printer apparatus including a print head having a number of thermal pixels, one for each image pixel, formed into a plurality of groups of thermal pixels, the thermal pixels of each group being simultaneously addressable in parallel and having N different possible temperature levels, the improvement comprising:

a. a storage device having a plurality of stages, one for each thermal pixel;

b. means for sequentially storing N digital signals in the stages of the storage device, in which the state of each stage corresponds to whether or not a corresponding thermal pixel is to be energized;

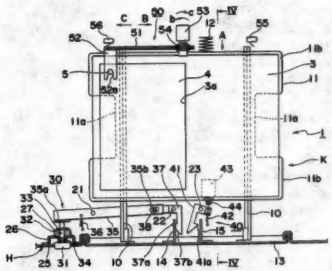
c. means for sequentially addressing the groups of thermal pixels each time a digital signal is stored in the storage device with each group of thermal pixels being addressed N times; and

d. means for selectively energizing each thermal pixel each time it is addressed depending upon the state of its corresponding stage until each thermal pixel is at one of N possible temperatures.

4,621,272
PHOTOSENSITIVE MEDIUM CASSETTE-RECEIVER SYSTEM

Shiro Toriumi, Zama; Seiichi Yamagishi; Yukiyoshi Yamakoshi, both of Machida; Kenjiro Ishii, Sagamihara, and Yutaka Maeda, Mitaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 26, 1984, Ser. No. 675,070
Claims priority, application Japan, Nov. 30, 1983, 58-227194
Int. Cl.[4] G03B *27/58, 17/26;* **G01D** *9/42, 15/28*
U.S. Cl. 346—134 **11 Claims**



1. An arrangement for detachably receiving a cassette containing photosensitive film sheets, with the cassette being formed with an opening for passing the photosensitive film sheets therethrough and including a light shielding cover for selectively covering and uncovering the opening, said arrangement comprising:

a drive means for driving the light shielding cover to selectively cover and uncover the opening;

an electrical lock means for locking the cassette when the light shielding cover is at a position uncovering the opening;

a mechanical lock means for locking the cassette when the cassette is inserted into said arrangement; and

a mechanical release means for releasing said mechanical lock means upon manipulation thereof to allow withdrawal of the cassette.

4,621,273
PRINT HEAD FOR PRINTING OR VECTOR PLOTTING WITH A MULTIPLICITY OF LINE WIDTHS

Dean A. Anderson, San Diego, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

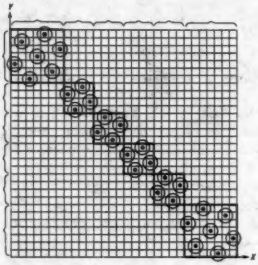
Filed Dec. 16, 1982, Ser. No. 450,483
Int. Cl.[4] G01D *15/16*
U.S. Cl. 346—140 R **10 Claims**

1. A print head suitable for vector mode plotting as well as raster mode printing and plotting, said print head comprising:

means for producing on a recording medium, without rotation or translation of the print head, a first primitive pattern of dots located in a first two-dimensional rectangular grid substantially at the points (0,0), (3,−1), (1,−3), (−2,−2), (−3,1), (−1,3), and (2,2); and

means for producing on the recording medium, without rotation or translation of the print head, a second primitive pattern of dots located in a second two-dimensional

rectangular grid at the points (0,0), (3,1), (1,3), (−2,2), (−3,−1), (−1,−3), and (2,−2), where the x- and y-axis of



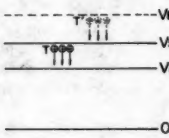
the first grid are each parallel to the x- and y-axis of the second grid, respectively.

4,621,274

METHOD OF CLEANING THE RECORD HEAD OF ELECTROSTATIC IMAGE RECORDING SYSTEM OF TRANSFER TYPE

Kazuhiro Yuasa, Zama, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Oct. 1, 1984, Ser. No. 656,498
Claims priority, application Japan, Sep. 30, 1983, 58-183788
Int. Cl.⁴ G01D *15/06*
U.S. Cl. 346—153.1 **8 Claims**



1. In an image recording system of the transfer type having page print cycles each to produce viewable images on a recording sheet and including an electrostatic record head having a multiplicity of electrodes arranged at least in an array defining a linear record plane, a record medium movable with respect to said record head through a record zone in proximity to and parallel with said record plane, said record medium being operable for carrying electrostatic charges thereon, and charging means operative to uniformly charge the record medium to a predetermined pre-charge voltage of a first polarity substantially throughout the area of the medium before said record medium is moved to said record zone, said electrodes being actuated commonly with a substantially constant bias voltage of said first polarity and selectively with control signals of a second polarity opposite to said first polarity for producing thereon linear patterns, each along said linear record plane, or electrostatic latent images by the selected ones of said electrodes during each of said page print cycles, said biase voltage being of a first predetermined level lower in absolute value than said pre-charge voltage,

a method of cleaning said electrodes during a period of time continuous to one of said page print cycles comprising:

(1) charging said record medium to the pre-charge voltage substantially throughout the area of the medium,

(2) applying to all of said electrodes a substantially constant cleaning voltage of said first polarity in lieu of said bias voltage and said control signals, said cleaning voltage being of a second predetermined level higher in absolute value than said pre-charge voltage, and

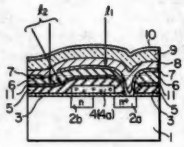
(3) moving said record medium through said record zone for inducing between the record medium and said record plane a static field by the differential between said pre-charge voltage and said cleaning voltage and thereby urging charges to transfer from said record plane to said record medium.

4,621,275

SOLID-STATE IMAGING DEVICE

Atushi Ueno, Hirakata, and Tadao Komeda, Ikoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 25, 1984, Ser. No. 603,813
Claims priority, application Japan, Apr. 30, 1983, 58-77131; Apr. 30, 1983, 58-77132
Int. Cl.⁴ H01L *27/14*
U.S. Cl. 357—30 **8 Claims**



1. A solid-state imaging device comprising:

a semiconductor circuit substrate having a signal charge storage region, a transfer region for transfer of signal charges stored in said storage region and a gate electrode;

an insulating film formed on said semiconductor circuit substrate;

an electrode divided into units of picture elements which overlie said insulating film and are electrically coupled to said storage region of said semiconductor circuit substrate through an opening formed in said insulating film;

a hole blocking layer formed on the divided electrode and said insulating film;

a photoconductive film formed on said hole blocking layer;

a transparent electrode formed on said photoconductive film; and

a light shielding electroconductive member disposed in said insulating film to cover the entire surface of said charge storage region, said transfer region, and said gate electrode without electrically contacting said divided electrode, said light shielding electroconductive member dividing said insulating film into upper and lower layers except for a portion surrounding said opening.

4,621,276

BURIED CONTACTS FOR N AND P CHANNEL DEVICES IN AN SOI-CMOS PROCESS USING A SINGLE N+POLYCRYSTALLINE SILICON LAYER

Satwinder D. S. Malhi, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 24, 1984, Ser. No. 613,679
Int. Cl.⁴ H01L *27/02*
U.S. Cl. 357—42 **12 Claims**

1. A semiconductor device which comprises:

(a) an insulating base member,

(b) spaced semiconductor material regions of opposite conductivity type disposed on said base an electrically isolated from each other,

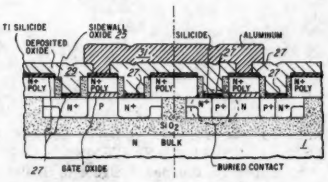
(c) one of an N and P channel MOS device formed in one of said regions,

(d) the other of an N and P channel MOS device formed in the other of said regions,

(e) one of said devices having a source region and a drain region, each of said source and drain regions having a

section of P+ type an adjacent section of N+ type material,

(f) connecting means electrically interconnected said N+ type and P+ type sections,



(g) insulating means over said connecting means, and (h) a conductor layer over said insulating means and spaced from said connecting means.

4,621,277

SEMICONDUCTOR DEVICE HAVING INSULATING FILM

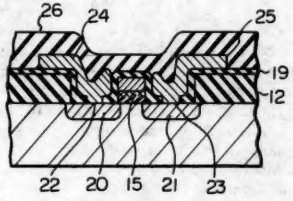
Takashi Ito, Kawasaki, and Takao Nozaki, Yokohama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 48,073, Jun. 13, 1979, abandoned. This application Apr. 28, 1982, Ser. No. 372,720

Claims priority, application Japan, Jun. 14, 1978, 53-71618; Jun. 15, 1978, 53-72654

Int. Cl.⁴ H01L *29/34*

U.S. Cl. 357—54 **27 Claims**



1. A semiconductor device comprising

a semiconductor silicon substrate, and

an insulating film having its lower surface on said semiconductor silicon substrate, the upper surface of said insulating film comprising an at least partially nitridated surface portion of a silicon dioxide film, and said silicon dioxide film comprising a thermally oxidized portion of said substrate.

4,621,278

COMPOSITE FILM, SEMICONDUCTOR DEVICE EMPLOYING THE SAME AND METHOD OF MANUFACTURING

Norio Miura, Oota, Japan, assignor to Sanyo Electric Co., Ltd. and Tokyo Sanyo Electric Co., Ltd., both of, Japan

Continuation of Ser. No. 335,658, Dec. 30, 1981, abandoned. This application May 29, 1985, Ser. No. 738,973

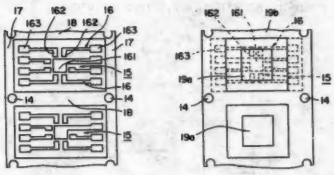
Int. Cl.⁴ H01L *23/40, 23/12, 23/14*

U.S. Cl. 357—70 **20 Claims**

1. A film lead frame comprising

a composite film including at least two electrically conductive films pemmanently adhered to and electrically isolated from each other with only thermal setting resin, said resin having a thickness thinner than a thickness necessary for supporting said conductive films, said resin thickness being delected to provide a breakdown voltage larger than a voltage applied to said conductive films,

a plurality of lead patterns each independently formed on one surface of said composite film with one of said conductive films, each said lead pattern including a plurality of leads, and



a supporting member formed on the other surface of said composite film with the other of said conductive films for supporting said lead pattern to form a substantially continuous conductive film.

4,621,279

NON-EVACUATED, RAPIDLY COOLABLE HOUSING FOR AN OPTO-ELECTRONIC SEMICONDUCTOR COMPONENT

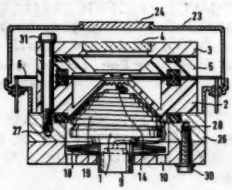
Horst Maier, Heilbronn, and Gottfried Pähler, Berlin, both of Fed. Rep. of Germany, assignors to Telefunken Electronic GmbH, Heilbronn, Fed. Rep. of Germany

Filed Oct. 12, 1984, Ser. No. 660,317

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1983, 3337194

Int. Cl.⁴ F25B *19/00;* **H01L** *23/50, 23/46*

U.S. Cl. 357—83 **20 Claims**



1. Housing for an opto-electronic semiconductor component operable at low temperatures, with the housing being in communication with a cooler operating in accordance with the Joule-Thompson effect, wherein the housing in non-evacuated and filled with gas, and the housing comprises a first housing section (2) which is in direct communication with the cooler (1) and which has a low thermal conductivity and capacity, a housing end section (3) containing a radiation transmitting window (4), said housing end section having a high thermal conductivity and capacity, and a third housing section between said first housing section and said housing end section and tightly connected thereto, and electric leads for the semiconductor component being conducted between said first housing section and said third housing section.

4,621,280

DIGITAL CHROMAKEY APPARATUS

Nobutaka Shinohara; Akihiro Minami, and Shuji Hirakawa, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Japan

Filed Mar. 15, 1985, Ser. No. 712,244

Claims priority, application Japan, Mar. 15, 1984, 59-50015

Int. Cl.⁴ H04N *9/75*

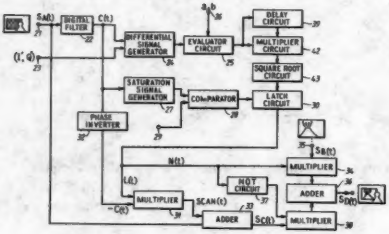
U.S. Cl. 358—22 **7 Claims**

7. A method of combining a first digital color-television

composite signal representing a first picture frame with a second digital color-television composite signal representing a second picture frame to be inserted into a desired portion of said first picture frame, said method comprising the steps of:

(a) separating out a color signal component from said first digital composite signal;

(b) generating a chromakey signal from said color signal component and from a reference signal;



(c) generating a first weighted signal weighted according to said chromakey signal and substantially equivalent to said first digital composite signal without said color component;

(d) generating a second weighted signal weighted according to said chromakey signal and substantially equivalent to said second digital composite signal; and

(e) combining said first and second weighted signals to form a combined composite signal.

4,621,281

VIDEO IMAGE PROJECTING SYSTEM WITH SEPARATE PROJECTING DEVICES FOR PROJECTING A BACKGROUND COMPONENT AND SHARP CONTOURS OF AN IMAGE

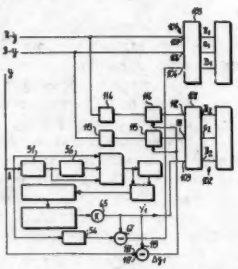
Joseph Colineau, Seiches sur Loir, France, assignor to Societe d'Electronique de la Region Pays de Loire Serel, Paris, France

Filed Apr. 23, 1984, Ser. No. 603,245

Claims priority, application France, Apr. 26, 1983, 83 06831

Int. Cl.[4] H04N *9/31, 9/16, 5/74*

U.S. Cl. 358—60 **20 Claims**



1. A video image projection system comprising at least two projecting devices for projecting superimposed images onto a projection surface, and a circuit for processing a video signal representative of an image to be projected to supply a background signal to one of said projecting devices for projecting a background component without fine details of the image, said processing circuit comprising a scanning circuit for selecting a lowest brightness value from brightness values of a point of the image to be projected and of points in a predetermined area around said point, and means for converting said lowest brightness value into the background signal supplied to the one projecting device for projecting said background component.

4,621,282

TRANSMITTING STEREO AUDIO PROGRAMS IN CABLE TV SYSTEMS

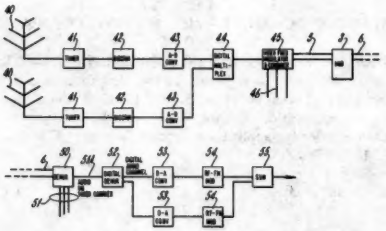
David J. Ahern, Ipswich, England, assignor to British Telecommunications plc, London, England

Filed Apr. 26, 1985, Ser. No. 727,555

Claims priority, application United Kingdom, Apr. 26, 1984, 8410671

Int. Cl.[4] H04N *7/22*

U.S. Cl. 358—86 **4 Claims**



1. In a cable TV system including a central station at which programmes originate, a customer's end, a switching point, an optical fibre connecting said central station to said switching point, a light source at the central station for directing light down said optical fibre, and a down drop connecting the switching point to the customer's end:

apparatus for transmitting stereo audio signals comprising at said central station;

means for receiving a plurality of stero radio signals;

means for demodulating each of said radio signals to produce respective stereo multiplex signals;

means for sampling each of said stereo multiplex signals; producing a digital representation of said samples and multiplexing said digital representations to produce a digital multiplex;

means for generating a video carrier;

means for modulating the frequency of said video carrier in response to said digital multiplex; and

means for modulating the intensity of light emitted by said light source in response to said modulated video carrier:

and further comprising at said switching point;

means for receiving said demodulating light from the fibre to derive the modulated video carrier,

means for demodulating said video carrier to produce the digital multiplex, and converting each digital representation to an analogue signal thus reconstituting the stereo multiplex signals;

means for generating an FM carrier for each of said stereo multiplex signals;

means for modulating the frequency of each of said FM carriers in response to its respective stereo multiplex signal, and

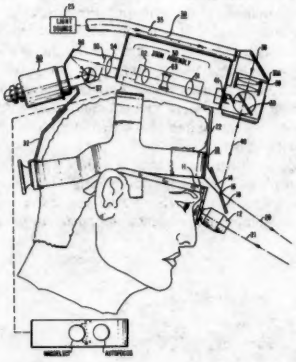
means for applying the modulated FM carriers to the down drop for transmission to the customer by frequency division multiplex.

4,621,283

HEAD-MOUNTED COAXIAL IMAGE SYSTEM FOR SURGEONS

Richard E. Feinbloom, New York, N.Y., assignor to Designs For Vision, Inc., Ronkomkoma, N.Y.

Filed Aug. 27, 1984, Ser. No. 644,852
Int. Cl.[4] A61B *1/04, 1/06;* F21V *13/06*
U.S. Cl. 358—93 20 Claims



1. A head-mounted coaxial imaging system of the type adapted to be supported on the head of the user by means of a headband worn by the user comprising:

a tiltable reflecting surface mounted on said headband and positioned above the eyes of said user when said headband is being worn,

a housing coupled to said headband and positioned above the head of said user said housing having an internal hollow and a front portion extending from said headband and overlying said reflecting surface, light means associated with said housing to project a beam of light with said beam directed to the surface of said reflecting surface whereby said beam as reflected is directed toward an area of observation,

an adjustable magnification means located in the hollow of said housing and operative to receive an image of said area of observation as reflected by said tiltable reflecting surface for magnifying said image of said area according to the preferences of said user and

means optically coupled to said magnification means for producing a viewable image of said area of observation.

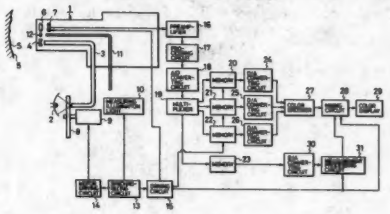
4,621,284

MEASURING ENDOSCOPE

Kimihiko Nishioka, and Hiroyoshi Fujimori, both of Hachiouji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 6, 1985, Ser. No. 742,056
Claims priority, application Japan, Jun. 9, 1984, 59-118836
Int. Cl.[4] A61B *1/06;* H04N *7/18*
U.S. Cl. 358—98 8 Claims

1. A measuring endoscope comprising an observing light projecting means, a measuring light projecting means arranged adjacently to said observing light projecting means, a single image pickup optical system for picking up the image of an object illuminated by said observing light projecting means and measuring light projecting means, an observing image signal processing means connected to said image pickup optical system and having a memory therein to process the observing image signal obtained by said image pickup optical system, a measuring image signal processing means connected to said image pickup optical system to process the measuring image signal obtained by said image pickup optical system and a displaying means connected to said observing image signal processing means and measuring image signal processing means, whereby the observing image and measuring image are picked up as divided in the time and the observing image signal is stored in said memory so that, during the measuring image



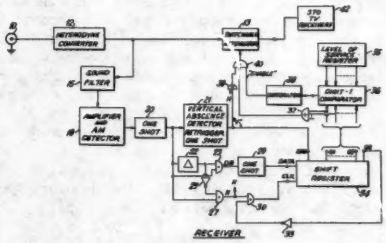
pickup period, the observing image signal stored in the memory is put into said displaying means to be continuously indicated by said displaying means.

4,621,285

PROTECTED TELEVISION SIGNAL DISTRIBUTION SYSTEM

John Schilling, Dresher, and Joseph Dolinski, Upper Black Eddy, both of Pa., assignors to Jerrold Division, General Instrument Corporation, Hatboro, Pa.

Filed Dec. 10, 1980, Ser. No. 215,044
Int. Cl.[4] H04N *7/167*
U.S. Cl. 358—120 15 Claims

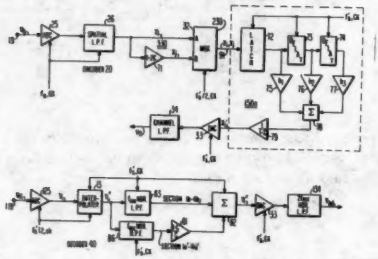


1. In combination in video distribution apparatus; signal originating means including means for transmitting a picture carrier selectively modulated in amplitude to reduce vertical and horizontal synchronizing information relative to video picture information, and means for transmitting a sound carrier modulated in amplitude with horizontal synchronizing pulse timing information except during the vertical synchronizing interval and a digital video tag interleaved with said horizontal synchronizing pulse timing information and at least one receiver coupled to said signal originating means for receiving said picture and sound carriers, each of said receivers including authorization register means, sound carrier amplitude demodulator means for recovering said horizontal synchronizing pulse timing information and said digital video tag, vertical detector means connected to said sound carrier amplitude demodulator means for recovering vertical synchronizing timing from the absence of said horizontal synchronizing pulse timing information on said sound carrier during said vertical synchronizing interval, authorization comparator means connected to said digital video tag recovering means and said authorization register means for selectively permitting video reception, and means enabled by said authorization comparator means for increasing the amplitude of said received modulated picture carrier during said horizontal and vertical synchronizing periods relative to said video picture information.

4,621,286
SPATIAL-TEMPORAL FREQUENCY INTERLEAVED PROCESSING OF A TELEVISION SIGNAL WITH REDUCED AMPLITUDE INTERLEAVED SECTIONS

Glenn A. Reitmeier, and Curtis R. Carlson, both of Mercer County, N.J., assignors to RCA Corporation, Princeton, N.J.

Filed May 29, 1984, Ser. No. 615,094
Int. Cl.[4] H04N 7/00, 7/12
U.S. Cl. 358—141 13 Claims



1. Apparatus for interleaving the spatial-temporal frequency spectrum of an image contained in a video signal to provide an interleaved video signal having a reduced amplitude interleaved section, comprising:

means for receiving a first signal containing an image having associated therewith an image spectrum in a spatial-temporal frequency volume;

means responsive to said first signal for producing a second signal that represents spatial-temporal carrier modulation of a spectral section of said image spectrum into an interleaved location adjacent said image spectrum, the interleaved spectral section being made to be of reduced amplitude relative to the amplitude of the corresponding spectral section of the image spectrum; and

means responsive to said second signal for producing an interleaved video signal that contains the reduced amplitude interleaved spectral section and a section of said image spectrum having omitted therefrom the spectral section corresponding to said interleaved spectral section.

4,621,287
TIME-MULTIPLEXING OF AN INTERLEAVED SPECTRUM OF A TELEVISION SIGNAL

Glenn A. Reitmeier, Trenton, and Curtis R. Carlson, Princeton, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed May 29, 1984, Ser. No. 615,091
Int. Cl.[4] H04N 7/08
U.S. Cl. 358—141 14 Claims

1. Apparatus for generating a video signal containing a time-multiplexed spatial-temporal frequency spectrum, comprising:

means for receiving a first video signal containing an image having associated therewith an image spectrum in a spatial-temporal frequency volume;

means responsive to said first video signal for generating a second video signal that contains a first portion of said image spectrum;

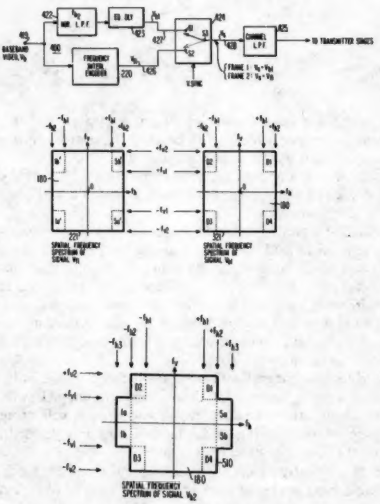
means responsive to said first video signal for generating a third video signal that contains a spectrum having a spatial-temporal interleaved section derived from a corresponding section of said image spectrum; and

means responsive to said second and third video signals for generating a fourth video signal that contains a spectrum that is time-multiplexed between said first portion of said image spectrum and said spatial-temporal interleaved section,

wherein said interleaved section is generally of rectangular shape located in a corner of the spectrum of the fourth video signal and is derived from a corresponding section of said image spectrum that contains horizontal spatial frequencies that are all high frequencies greater than a first, horizontal frequency and that contains vertical spatial frequencies that are all low frequencies lower than a second, vertical frequency and wherein said first portion of said image spectrum is positioned in the location of said interleaved section and is of rectangular shape, containing only diagonal spatial frequencies of horizontal frequency lower than said first, horizontal frequency, and of vertical frequency higher than said second, vertical frequency, said fourth video signal further containing a second spatial frequency spectrum of nonoverlapping spatial frequencies that complement said diagnonal frequencies and that are present in said fourth video signal when said first portion is present therein and also when said interleaved section is present therein.

9. Apparatus for processing a video signal that contains a time-multiplexed spectrum, comprising:

means for receiving a first video signal that contains a first spatial-temporal frequency spectrum in at least first and



second dimensions that contains the image content of an image spectrum, said first spectrum including a first section representative of a first portion of said image spectrum and a time-multiplexed spatial-temporal frequency interleaved second section representative of a second portion of said image spectrum that is time-multiplexed in said first video signal with said first portion, one of said first and second sections comprising a high frequency section that contains high spectral frequencies in said first dimension;

first modulation means responsive to said first video signal for generating a second video signal that contains a modulated spectral section that is representative of the image content of said high frequency section and that is located in a low frequency spatial-temporal region that has spectral frequencies in said one dimensions that are lower than said high spectral frequencies;

a delay element coupled to said first modulation means for storing said modulated signal to generate a delayed video signal that contains the image content of said high frequency section;

a time-demultiplexer responsive to said delayed video signal

and to said first video signal for time-demultiplexing said first and second portions of said image spectrum;

means including second modulation means responsive to said delayed video for generating a second modulated spectral section representative of the image content of said high frequency section restored to its corresponding location in said image spectrum; and

means coupled to said time-demultiplexer and coupled to said second modulation means for generating a reconstructed spectrum inclusive of said first and second portions, with the two portions being time-demultiplexed from each other.

4,621,288

REFERENCE TIME DETECTING CIRCUIT

Hisafumi Yamada, Tokyo; Choei Kuriki, Urawa, and Junya Saito, Wako, all of Japan, assignors to Sony Corporation, Tokyo, Japan

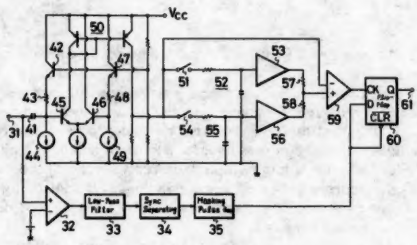
PCT No. PCT/JP82/00416, § 371 Date Jun. 20, 1983, § 102(e) Date Jun. 20, 1983, PCT Pub. No. WO83/01552, PCT Pub. Date Apr. 28, 1983

PCT Filed Oct. 21, 1982, Ser. No. 515,043

Claims priority, application Japan, Oct. 21, 1981, 56-168062

Int. Cl.⁴ H04N *5/05, 5/93*

U.S. Cl. 358—153 **4 Claims**



1. In a reference time detecting circuit for detecting a predetermined transit of a synchronizing signal for use as a reference time for a video signal, a combination comprising; means for generating a masking pulse during the period of said transit and a part of said video signal, means for comparing said video signal with a predetermined level set at less than the level of said synchronizing signal, and a flip-flop having one input connected to receive said masking pulse and another input connected to said comparing means for developing a signal corresponding to operation of said comparing means within the period of said masking pulse.

4,621,289

DIGITAL SYNC SEPARATOR AND DIFFERENTIATOR

Stan Bart, Hoffman Estates, and Gopal K. Srivastava, Buffalo Grove, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Mar. 21, 1984, Ser. No. 591,741

Int. Cl.⁴ H04N *5/08*

U.S. Cl. 358—153 **32 Claims**

1. In a television receiver system for receiving a composite video signal bearing video and sync information in pulse form, a method for separating sync information from said video information comprising:

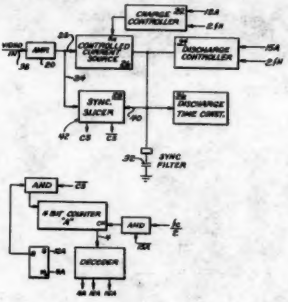
generating a D.C. reference voltage across a capacitor by supplying a charging current derived from said composite video signal to said capacitor;

subtracting said D.C. reference voltage from said composite video signal to provide separated sync information;

generating an output signal representative of said separated sync information, said output signal having pulses corresponding to the sync pulses in said received video signal;

determining the length of time elapsed since the first occurrence of a sync pulse in said output signal; and

limiting the time during which said charging current is



supplied to said capacitor to a predetermined length of time after the first occurrence of a sync pulse in said output signal so as to control the magnitude of said D.C. reference voltage.

4,621,290

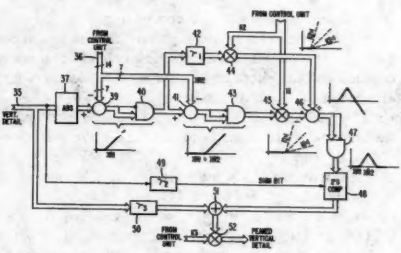
PIECEWISE LINEAR DIGITAL SIGNAL PROCESSOR AS FOR DIGITAL VIDEO VERTICAL DETAIL PROCESSING

Russell T. Fling, Fishers, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed Apr. 12, 1984, Ser. No. 599,536

Int. Cl.⁴ H04N *5/14*

U.S. Cl. 358—166 **18 Claims**



18. Apparatus for processing a digital video signal which exhibits positive and negative values, comprising:

an input bus for applying said digital video signal;

a source of a reference value, X_{R1};

means coupled to said input bus and said source for passing a single polarity signal corresponding to differences between the magnitude of said digital video signal and said reference value;

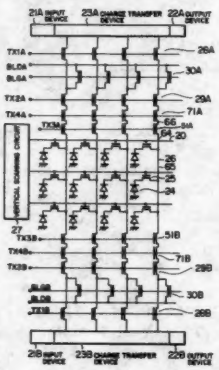
a polarity inverting circuit having an input port and an output port and responsive to the polarity of digital video signal samples occurring at said input bus, for selectively inverting the polarity of signal samples applied to its input port; and

means for coupling the input port of the polarity inverting circuit to said means for passing a single polarity signal, wherein output signal from the polarity inverting circuit is symmetrically processed relative to signal polarity, and is functionally dependent upon the reference value X_{R1}.

4,621,291
SOLID-STATE IMAGING DEVICE

Iwao Takemoto, Tokyo; Shinya Ohba, Kanagawa; Masakazu Aoki, Kodaira; Haruhisa Ando, Hachioji; Masaaki Nakai, Kodaira; Toshifumi Ozaki, Tokyo, and Takuya Imaide, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 1, 1983, Ser. No. 462,763
Claims priority, application Japan, Mar. 3, 1982, 57-32468
Int. Cl.[4] H04N *3/14*
U.S. Cl. 358—213 2 Claims



1. A solid-state imaging device comprising:

a MOS-type photosensor having picture elements each comprising a photodiode and a switching field effect transistor coupled to said photodiode, said picture elements being arrayed in the form of a matrix;

vertical signal lines coupled to said picture elements for transferring signal outputs of the respective picture elements of said MOS-sensor to a CTD (charge transfer device), wherein the signal outputs of said picture elements are read out by said CTD: and

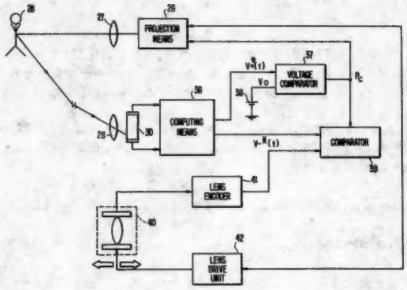
signal-transfer means for causing bias charges from said CTD to get into said vertical signal lines so as to mix them with signal charges of said signal outputs of said picture elements and for causing the mixed signal charges to get back into said CTD, said signal-transfer means including a first transfer gate which is connected between the vertical signal line and said CTD, reset means for setting a potential of said signal output line to a predetermined reference voltage before the bias charges get into said signal output line, a second transfer gate which is connected between said first transfer gate element and said vertical signal line, a reset gate element which is connected between a juncture of said first and second transfer gates and reset-voltage line, and a third transfer gate for rapidly removing unnecessary charges from said second transfer gate to lower a fixed noise caused by said unnecessary charges, said third transfer gate being connected between said second transfer gate and said vertical signal line, and

further comprising a clamp gate for determining the clamp potential at the vertical signal line, which is connected between said third transfer gate and said vertical signal line.

4,621,292
AUTOMATIC FOCUSING DEVICE FOR A VIDEO CAMERA

Yoshiaki Hirao, Habikino; Ryuichiro Kuga, Katano, and Yoshitomi Nagaoka, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 16, 1984, Ser. No. 661,326
Claims priority, application Japan, Oct. 19, 1983, 58-195635; Oct. 19, 1983, 58-195665; Oct. 20, 1983, 58-196322
Int. Cl.[4] G01J *1/20*
U.S. Cl. 358—227 6 Claims



1. An automatic focusing device for a video camera, comprising:

a projection means for projecting a distance measuring ray;

a converging lens for converging the distance measuring ray which has been reflected from an object to be measured;

a light spot detector positioned at a focus of said converging lens and outputting two photocurrents, a ratio of the two photocurrents varying corresponding to a spot of light formed on said light spot detector by the reflected distance measuring ray;

a computing means for computing a sum of and a difference between said two photocurrents;

a photographic lens for photographing said object;

a focusing lens for focusing said photographic lens;

a lens encoder which detects movement of said focusing lens and converts the detected movement into an electrical signal;

a first comparator for comparing the difference between said two photocurrents with an output value of said lens encoder;

a lens driving means for driving said focusing lens forwardly or backwardly; and a second comparator for comparing the sum of said two photocurrents with a predetermined value;

wherein said projection means stops projection when the sum of said two photocurrents coincides with said predetermined value, and

said lens driving means drives said focusing lens until the output value of said lens encoder reaches a value corresponding to the difference between said two photocurrents at the time when said projection means stops projection, thereby stopping said lens in an optimum focused position.

4,621,293
INTEGRATED LENS AND CRT MOUNT FOR PROJECTION TV

Louis J. Matis, Lombard, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Jul. 16, 1985, Ser. No. 755,742
Int. Cl.[4] H04N *5/74, 9/31*
U.S. Cl. 358—231 13 Claims

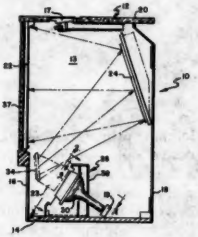
1. In a projection television having a plurality of lens and

CRT combinations including center, right and left CRT's arranged in a generally linear, side-by-side array and center, right and left lenses positioned immediately adjacent to and forward of an associated CRT, an integrated lens and CRT mount comprising:

a generally planar panel having center, right and left apertures aligned in a generally linear array, wherein each of said center, right and left apertures includes a respective keying slot in the periphery thereon;

respective pluralities of upper and lower spaced positioning apertures positioned adjacent to each of said center, right and left apertures in said panel;

respective pairs of upper and lower mounting blocks positioned on the rear side of said panel immediately adjacent to respective upper and lower portions of each of said center, right and left apertures, wherein each of said mounting blocks includes a plurality of spaced positioning bosses on a forward surface thereof adapted for insertion in said upper and lower positioning apertures, respectively, so as to maintain each of said mounting blocks in a predetermined position and orientation on said panel;



center, right and left housings mounted to respective forward portions of the center, right and left CRT's and adapted for positioning between and engagement by a respective pair of said upper and lower mounting blocks, wherein each CRT is securely mounted to the rear side of said panel immediately adjacent to and aligned with a respective one of said apertures therein such that said center, right and left CRT's are directed to a common image display area; and

center, right and left lens flanges positioned on respective aft portions of the center, right and left lenses and mounted to a front surface of said panel, wherein each of said lens flanges includes a keying projection adapted for insertion within a respective one of said keying slots when the lens flange is positioned within a respective aperture in said planar panel for providing proper relative rotational orientation of said right and left lenses relative to said center lens.

4,621,294

CONTRAST ENHANCING OPTICAL COUPLING PAD FOR PROJECTION TV

Sae D. Lee, Buffalo Grove, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

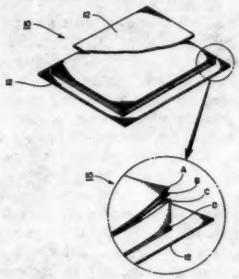
Filed Mar. 30, 1984, Ser. No. 595,085
Int. Cl.[4] H04N *5/74*
U.S. Cl. 358—237 **5 Claims**

1. In an image projection system comprising a projection type cathode ray tube for developing an image upon a display surface associated therewith,

and an optical projector comprising a lens having an entrance element, the central axis of which is substantially coincident with the axis of said display surface, for projecting an aerial image of said developed image to a viewing screen,

the improvement for enhancing the contrast of said projected image comprising:

means for effecting a direct optical coupling between said display surface of said tube and said lens element comprising a transparent, compressible, multi-layer, resin formulated pad for providing a close index of refraction match between said display surface and said lens element,



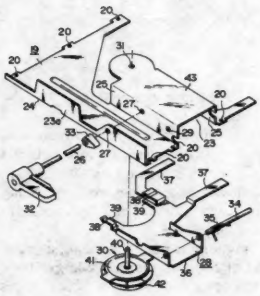
said pad having a first outer peelable layer disposed in intimate contact with said image display surface and a second outer peelable layer disposed in intimate contact with said lens element to substantially preclude an air gap between said display surface and said lens element.

4,621,295

FLOPPY DISK DRIVE HAVING IMPROVED FRAME MEANS

Kazuhiko Okamura, Kanagawa, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Nov. 24, 1983, Ser. No. 554,297
Claims priority, application Japan, Nov. 26, 1982, 57-208026
Int. Cl.[4] G11B *5/016*
U.S. Cl. 360—99 **4 Claims**



1. A floppy disk drive having a path extending longitudinally from the front thereof for the insertion and removal of a magnetic medium and comprising:

a base;

a spindle rotatable about a spindle axis;

a magnetic head carried by a carrier, said carrier being mounted for reciprocal motion across tracks on the magnetic medium;

a frame having a substantially planar guide face opposed to said base for guiding the magnetic medium during insertion and removal thereof,

said frame further comprising a forward wall extending transversely and perpendicular to said guide face at a forward edge of said frame,

said frame further comprising a channel-like accommodating recess formed by an upper wall spaced from the plane of

said guide face and first and second side walls extending between said guide face and said upper wall;

a clamp for pressing the center of the magnetic medium against said spindle, means mounting said clamp for rotation and for axial sliding motion within said accommodating recess;

said mounting means including a clamp arm mounted for pivotal motion between an operative and inoperative position within said accommodating recess of said frame and comprising means for pressing said clamp agagainst the magnetic medium in the operative position, said clamp arm further including a guide edge substantially coplanar with said guide face for further guiding of said magnetic medium during insertion and removal thereof in the inoperative position and

means for moving said clamp arm, comprising an operating shaft supported on said forward wall of said frame and on said first and second side walls of said accommodating recess, and a cam mounted on said operating shaft for contacting and moving said clamp arm between said positions.

4,621,296

MAGNETIC HEAD UNIT

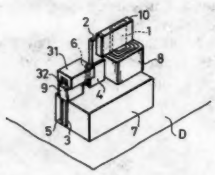
Atsushi Komagata, Niigata, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Jul. 13, 1984, Ser. No. 630,655

Claims priority, application Japan, Jul. 13, 1983, 58-107591[U]

Int. Cl.[4] G11B *5/27*

U.S. Cl. 360—121 **2 Claims**



1. A magnetic head unit comprising:

a read/write head;

two erase heads on both sides of said read/write head, each erase head comprising a pair of cores which are separated by a gap on one side which is in contact with a magnetic medium and which have open ends extending beyond said read/write head on the other side from said medium contacting side; and

a back core having a groove extending along its length in a center part of one side thereof, said groove engaging and bridging the open ends of each of said cores of said two erase heads.

4,621,297

CASSETTE WITH COVER LATCHES CONTROLLING THE COVER OPENING DIRECTION

Cornelis M. Beyërsbergen van Henegouwen; Karel G. M. Koken, and John C. J. Olierook, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 10, 1984, Ser. No. 598,635

Claims priority, application Netherlands, Nov. 17, 1983, 8303943

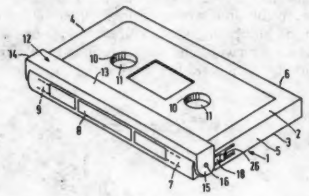
Int. Cl.[4] G11B *23/02, 15/32, 23/04;* G03B *1/04*

U.S. Cl. 360—132 **20 Claims**

1. A cassette comprising a housing having an end and first and second side walls, a cover which in a closed position at least partly covers said end, means for pivotally connecting said cover to said housing to open by pivotal movement about a single axis only in each of two opposite directions from said closed position, and means for latching the cover in the closed position,

wherein said means for latching comprises a first latching projection arranged for cooperation with a first slot, adjacent said first side wall, and a second latching projection and corresponding second slot adjacent said second side wall, each said latching projection being movable into and out of the respective slot in a direction generally parallel to said axis, from an inserted position to an unlatched position,

said slots each being concentric about said axis and each extending from a respective first end to a respective second end, arranged such that in the closed position of the



cover each latching projection is aligned with the first end of the respective slot, and the slots extend in opposite angular directions about said axis,

whereby when the cover is in the closed position and the projections are each in the inserted position, the cover is latched against pivoting in either direction, and when the first latching projection is moved to its unlatched position the cover is free to open in the first direction only, the second latching projection and its respective slot being relatively movable between the respective first and second ends; and when only the second latching projection is moved to its unlatched position the cover is free to open in the second direction only.

4,621,298

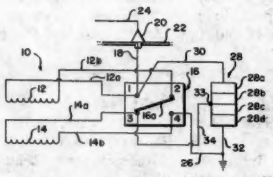
DUAL VOLTAGE DISTRIBUTION TRANSFORMER WITH INTERNAL VARISTOR SURGE PROTECTION

Charles J. McMillen, Hickory, N.C., assignor to General Electric Company, King of Prussia, Pa.

Filed May 31, 1985, Ser. No. 739,631

Int. Cl.[4] H02H *7/04*

U.S. Cl. 361—38 **16 Claims**



1. A dual voltage distribution transformer comprising, in combination:

A. a transformer tank;

B. at least first and second primary windings disposed within said tank, said first primary winding having a first termination for connection to line voltage and a second termination, and said second primary winding having a third termination and a fourth termination for connection to ground;

C. a switch operable in a first condition to connect said second and third primary winding terminations in series, such as to connect said first and second primary windings in series, said switch operable in a second condition to

connect said first and third winding terminations in common and to connect said second and fourth winding terminations in common, such as to connect said first and second primary windings in parallel;

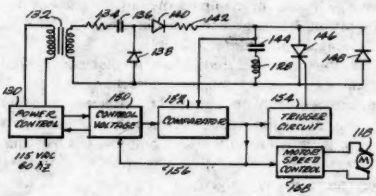
D. a plurality of varistor elements disposed within said tank, said varistor elements electrically connected in series and physically arranged in a stack having opposed first and second electrode ends, said first stack end electrically connected with said first primary winding termination and said second stack end electrically connected with said fourth primary winding termination, said stack further including an intermediate connection point at a location between adjacent ones of said varistor elements, said connection point electrically connected with said third primary winding termination.

4,621,299

HIGH ENERGY DEGAUSSER

James D. Hill, Mount Airy, Md., assignor to General Kinetics Inc., Rockville, Md.

Filed Nov. 5, 1982, Ser. No. 439,550
Int. Cl.⁴ H01F *13/00*
U.S. Cl. 361—151 **42 Claims**



1. Apparatus for degaussing a magnetized object comprising:

means for storing energy:

means for gradually applying energy to said storing means;

means for monitoring the amount of energy stored in said storing means; and

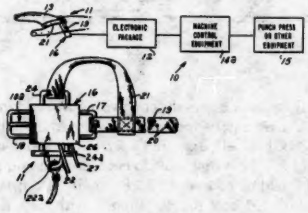
means, responsive to said monitoring means, for repeatedly releasing energy from said storing means to said object, said releasing means reducing the energy stored in said storage means as determined by said monitoring means at the time of release with each said repeated release of energy, said releasing means including means for reversing the polarity of said energy with respect to said object over said repetitions.

4,621,300

SAFETY MONITORING SYSTEM FOR PUNCH PRESS OPERATORS

Ray E. Summerer, 1425 110th Ave., Otsego, Mich. 49078

Filed Jul. 5, 1984, Ser. No. 627,680
Int. Cl.⁴ H01H *35/00*
U.S. Cl. 361—175 **6 Claims**



1. A passive safety monitoring system for press operators, comprising in combination:

a wrist mountable unit containing mechanism which controls light passage through two optical fiber cables secured to said wrist mountable unit when the wrist unit is properly positioned on the wrist of the operator;

a separate electronic unit which initiates light passage through one of the optical fiber cables to the wrist unit and, also, receives light through the second optical fiber cable from the wrist unit completing a light transmission circuit to activate additional electronic circuitry in the electronic unit to energize press control circuits;

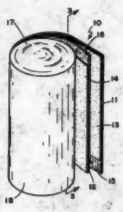
a press operating system activated by the press control circuits in said additional electronic circuitry.

4,621,301

DIELECTRIC FLUID FOR A CAPACITOR

Vandos Shedigian, Indianapolis, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Filed Oct. 31, 1985, Ser. No. 793,136
Int. Cl.⁴ H01G *4/22, 3/175*
U.S. Cl. 361—314 **5 Claims**



3. A capacitor, comprising:

a housing,

a pair of convolutely wound metallized film electrodes enclosed within said housing; and

a dielectric liquid consisting essentially of glyceryl triacetate and 0.01 to 10 weight % of a hindered phenolic antioxidant of N, N′-bis[3-(3′,5′-di-tert-butyl-4′-hydroxyphenyl)-propionyl]hydrazine.

4,621,302

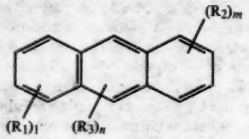
ELECTRICAL INSULATING OIL AND ELECTRICAL APPLIANCES IMPREGNATED WITH THE SAME

Atsushi Sato, Tokyo; Keiji Endo, Yokosuka; Shigenobu Kawakami, Ichikawa; Hitoshi Yanagishita, and Shozo Hayashi, both of Yokohama, all of Japan, assignors to Nippon Petrochemicals Company, Limited, Tokyo, Japan

Filed Mar. 13, 1985, Ser. No. 711,155
Claims priority, application Japan, Mar. 14, 1984, 59-48591
Int. Cl.⁴ H01G *4/22*; H01B *3/22*
U.S. Cl. 361—315 **7 Claims**

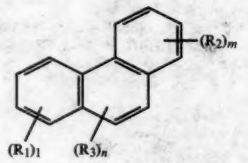
1. An electrical appliance comprising dielectric or insulating material, and wherein at least a part of said dielectric or insulating material is made of insulating plastim film, and wherein said electrical appliance is impregnated with an electrical insulating oil containing composition comprising: (a) 0.1 to 40% by weight of monoolefin or diolefin having three condensed or non-condensed aromatic rings selected from the following General Formulae (I), (II) and (V) and, (b) 99.9 to 60% by weight of other electrical insulating oil, wherein said (a) and (b) are the only electrical insulating oil components of said composition;

General Formula (I):



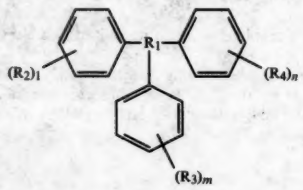
wherein each of R_1, R_2 and R_3 is a hydrogen atom or an aliphatic hydrocarbon group having 1 to 4 carbon atoms and having none of or one or two of ethylenically unsaturated double bonds, each of l and m is an integer from 1 to 3, n is an integer from 0 to 2, and the total number of ethylenically unsaturated double bond in R_1 of l in number, R_2 of m in number and R_3 of n in number is 1 or 2,

General Formula (II):



wherein each of R_1, R_2 and R_3 is a hydrogen atom or an aliphatic hydrocarbon group having 1 to 4 carbon atoms and having none of or one or two ethylenically unsaturated double bonds, each of l and m is an integer from 0 to 3, n is an integer from 1 to 2, and the total number of ethylenically unsaturated double bonds in R_1 of l in number, R_2 of m in number and R_3 of n in number is 1 or 2, and

General Formula (V):



wherein R_1 is an aliphatic hydrocarbon group having 1 to 4 carbon atoms and having none of or one or two of ethylenically unsaturated double bonds, each of R_2 to R_4 is a hydrogen atom or an aliphatic hydrocarbon group having 1 to 4 carbon atoms and having none of or one or two of ethylenically unsaturated double bonds, each of 1, m and n is an integer from 0 to 3, and the total number of ethylenically unsaturated double bonds in R_1 and R_2 of 1 in number, R_3 of m in number and R_4 of n in number is 1 or 2.

4,621,303

CONTROL CENTER WITH WEDGE AND JAW CONNECTOR FOR DISTRIBUTING ELECTRIC POWER

Neal E. Rowe, Asheville, N.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 26, 1984, Ser. No. 654,626

Int. Cl.[4] H02B *11/12*

U.S. Cl. 361—338 **2 Claims**

1. A control center for distributing electric power from a power source to a power receiving device, comprising

(a) a cabinet having at least one bus bar,

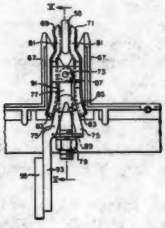
(b) a power receiving device within the cabinet,

(c) conductor means electrically connecting the power receiving device to the bus bar and the means including a clamp,

(d) the clamp including a jaws assembly having a pair of jaws and a pivotal connection for the jaws;

(e) the pair of jaws being movable between clamped and unclamped positions of the bus bar;

(f) each jaw having an extended position on the side of the pivotal connection opposite the bus bar;



(g) wedge means for clamping the jaws to the bus bar and comprising a wedge and draw-in means for the wedge including a bolt and nut assembly;

(h) the bolt being secured to the pivotal connection and extending between the extended portions;

(i) the nut being mounted on the bolt adjacent to the wedge so as to move the wedge between the extended portions and to thereby clamp the jaws onto the bus bar; and

(j) the extended portions diverging apart so as to facilitate movement of the wedge.

4,621,304

HEAT RADIATOR ASSEMBLY

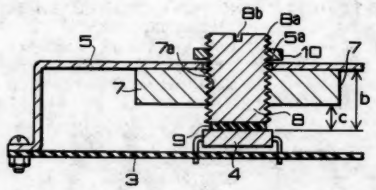
Kenji Oogaki, and Hiroshi Sato, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 30, 1984, Ser. No. 595,556

Claims priority, application Japan, Mar. 31, 1983, 58-49050[U]; Mar. 31, 1983, 58-49051[U]; Mar. 31, 1983, 58-49052[U]

Int. Cl.[4] H05K *7/20*

U.S. Cl. 361—386 **4 Claims**



1. A heat radiator assembly comprising a shield case which protects electronic parts mounted on a board, a first heat sink provided on said shield case, and a second heat sink engagedly held by said first heat sink so as to contact with said electronic parts, said shield case having a hole therein, said first heat sink having a threaded hole therein aligned with said hole in said shield case, said second heat sink being received through said hole in said shield case, and said second heat sink being threadedly engaged with said threaded hole in said first heat sink in heat transfer relation therewith.

4,621,305

HEADER CONNECTOR AND ATTACHMENT

Ronald E. Daum, Warren, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 22, 1984, Ser. No. 643,160

Int. Cl.[4] H05K *1/00*

U.S. Cl. 361—398 5 Claims

1. In combination with a printed circuit including a flexible substrate having a plurality of conductive circuits thereon defining a plurality of exposed end segments, a header connector and attachment comprising, a connector having a plurality of terminal support means thereon, an outrigger, means rigidly connecting said outrigger to said connector in laterally spaced parallel relation thereto so that an open span is defined between said connector and said outrigger, means locating said connector relative to said substrate whereby said open span is over said circuit end segments, a plurality of pin terminal means in said terminal support means each including a short leg extending between said connector and said outrigger, guide means on said outrigger engaged on a distal end of each of said short legs aligning each of said short legs parallel to and over corresponding ones of said circuit end segments, and a plurality of splice clips below said open span each having tabs projecting through said substrate and wrapped around a corresponding one of said short legs whereby said substrate is forced against said corresponding short leg with one of said circuit end segments below and parallel to said corresponding one of said short legs captured therebetween.

4,621,306

DISPLAY DEVICE

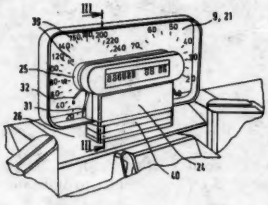
Gerhard Sell, Schmitten, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 4, 1985, Ser. No. 719,763

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1984, 3412636

Int. Cl.[4] G01D *11/28*

U.S. Cl. 362—29 27 Claims



1. A display device having a transparent display field through which ambient light can pass from the side facing away from an observer to the side facing the observer and on which characters and/or symbols can be presented against a light background, and wherein said display device is operable with a source of light and further comprises:

a light-guide plate in the display field on the side facing away from the observer, said light-guide plate being formed of transparent material and being positioned for transmitting ambient light via said light-guide plate from a location behind said light-guide plate through said display field toward said observer, said light-guide plate including light-dispersing particles distributed about said light guide plate, said light-guide plate and said source of light being oriented relative to each other for guiding light from said source of light to a region behind said display field for illuminating said display field.

4,621,307

HEADLIGHT FOR MOTOR VEHICLES

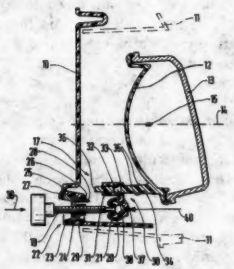
Walter Weber, Weil der Stadt, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 3, 1985, Ser. No. 773,195

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1984, 3432446; Mar. 19, 1985, 3509831

Int. Cl.[4] B60Q *1/04*

U.S. Cl. 362—66 17 Claims



1. A headlight for a motor vehicle comprising a housing, a reflector, at least one articulated support for attaching the reflector to the housing, said support having one end portion provided with first interlocking means for snap engaging a recess in the housing, another end portion secured to the reflector, and an intermediate portion, said intermediate portion including second interlocking means for snap engaging said other end portion in a direction parallel to the engagement of said first interlocking means, and means for joining together the first and second interlocking means, said joining means snap engaging one of said interlocking means in a direction parallel to the direction of engagement of respective interlocking means.

4,621,308

TACKLE BOX WITH LIGHT UNIT ASSEMBLY

Rodney D. Holmberg, 1365 Gentry Ave., N., Oakdale, Minn. 55119, and Brian K. Bolstad, Oakdale, Minn., assignors to Rodney D. Holmberg, Stacy, Minn.

Filed Jan. 16, 1984, Ser. No. 570,764

Int. Cl.[4] F21V *33/00*; B65D *85/20*

U.S. Cl. 362—154 5 Claims

1. In combination, a self container light unit and a fishing tackle box having at least one upwardly and outwardly movable tray assembly including individual trays, said light unit comprising:

(a) a generally thin, rectalinear housing having generally flat top and bottom portions, opposing side portions, and a front and rear portion, said bottom portion having a transparent sheet structure for the emission of light therethrough, said housing further having a reflective sheet

portion disposed therein, and having at least one light source disposed between said reflective sheet and said transparent sheet for illuminating predetermined portions of said tackle box, said housing further having a frontal sloping diagonal portion extending downward from the top thereof and having an aperture therein,

(b) power source means disposed within said housing at a location between said reflective sheet and said top portion of said housing, said housing further having access means thereinto for access to said power source,

(c) switch means communicating with said power source means and said light source and being accessible external said housing through said aperture in said sloping diagonal portion of said housing,

(d) hinge means communicatively attached to said opposing side portions of said housing and to the movable tray assembly of the tackle box, said hinge means being disposed to provide a predetermined angular disposition of said housing of approximately 60 degrees with respect to the tackle box as the tray is moved upwardly and outwardly, and

(e) tray unit assembly portions comprised of bottom members, front edges and compartment dividers and said front edges and said compartment dividers comprised of light transparent material, whereby, a fisherman is provided with a light source directed to predetermined portions in the tackle box as the tray unit is moved therefrom, and wherein the light is directable to the predetermined portions by means of the transparent and reflective portions of the tray assembly.

4,621,309

ELONGATED LUMINAIRE

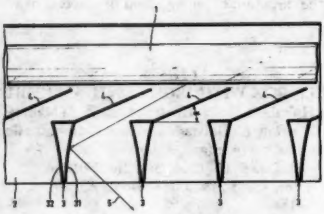
Franz-Eugen Grawe; Manfred Grimm; Richard Schneppendahl, and Fred Hasemann, all of Arnsberg, Fed. Rep. of Germany, assignors to Trilux-Lenze GmbH + Co. KG, Arnsberg, Fed. Rep. of Germany

Filed Mar. 25, 1985, Ser. No. 715,924

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1984, 3412162

Int. Cl.[4] F21V *11/06, 13/10*

U.S. Cl. 362—342 **4 Claims**



1. In an elongated luminaire having at least one fluorescent lamp and a louver arranged therebelow, the louver consisting of lamp-parallel longitudinal reflectors and reflecting cross lamellae arranged transversely thereto and of substantially V-shape in cross section, the lamella legs of which having a parabolic shape in cross section, the improvement comprising a light guiding plate arranged on one leg of each cross lamella extending upwardly at an angle and substantially adjacent to the neighboring cross lamella in the vertical projection.

4,621,310

HEATING LUMINAIRE PROTECTOR

Richard Keating, 330 Sutton Rd., Barrington Hills, Ill. 60010

Filed Jul. 18, 1985, Ser. No. 756,166

Int. Cl.[4] F21V *7/00*

U.S. Cl. 362—344 **5 Claims**

1. A luminaire comprising:

a generally conical metal housing defining a circular opening for insertion and removal of a bulb;

recess means adjacent said circular opening defining an annular ring of greater diameter than the diameter of said opening;

protective guard means for covering said opening;

rigid extension means on said protective guard means, when in an undeformed condition, defining a circle of substantially the same diameter as the diameter of said recess means;

said housing being slightly deformable under pressure to enable said rigid extension means, when in a deformed condition, to be manipulated through said circular opening and into position in said annular ring; and

means for locking said protective guard means into said recess means by use of a tool to at least partially restore said rigid extension means to said undeformed condition.

4,621,311

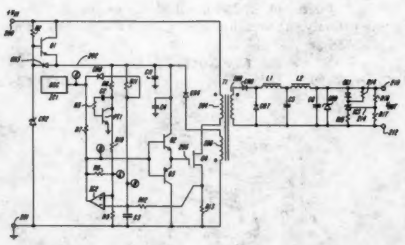
HIGH-SPEED SWITCHING REGULATOR

Richard A. O'Brien, Newton, Mass., assignor to Stevens-Arnold, Inc., Boston, Mass.

Filed Feb. 6, 1985, Ser. No. 698,799

Int. Cl.[4] H02M *3/335*

U.S. Cl. 363—21 **14 Claims**



1. A switching regulator for conditioning an input voltage to provide a regulated output voltage to utilization apparatus, comprising

timing means for generating a periodic timing waveform,

means responsive to said output voltage for generating an error signal indicating a difference between said output voltage and a desired output voltage,

means for generating a reference signal,

comparator means responsive to said error signal and said

reference signal for generating an output signal when said error signal is equal to said reference signal,

means for latching said comparator means into one of its states,

means responsive to the output of said timing means for changing said comparator means to the other of its states, and

switching means responsive directly to a logical combination of the output of said comparator means and the output of said timing means for temporarily connecting said input voltage to said utilization apparatus.

4,621,312

SWITCHING REGULATOR

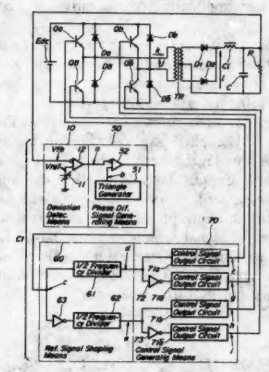
Itsuo Yuzurihara, Kanagawa, and Masami Arai, Tokyo, both of Japan, assignors to Kabushiki Kaisha Kyosan Seisakusho, Yokohama, Japan

Filed Jul. 10, 1984, Ser. No. 629,387

Claims priority, application Japan, Jul. 15, 1983, 58-129635

Int. Cl.[4] H02M *3/335*

U.S. Cl. 363—26 **8 Claims**



1. A switching regulator including a switching circuit having transistors connected as switching elements in a bridge formation, comprising:

a deviation detecting means for detecting a deviation between the detection value of a controlled variable and a reference value;

a phase difference signal generating means for generating a phase difference signal having a pulse width corresponding to the deviation;

a reference signal shaping means for shaping two reference signals such that they have the same, constant waveforms, each having an ON-time and an OFF-time equal to the cycle of said phase difference signal, said reference signals having a phase difference therebetween which is equal to the pulse width of said phase difference signal; and

a control signal generating means, including a delay means and adapted to output control pulse signals each responsive to the respective ON- or OFF-time of said two reference signals and having a width shorter, by a delay time produced by said delay means, than said ON- or OFF-time of said reference signals, said control signal generating means for controlling the ON/OFF status of the respective transistors, thereby to control the switching circuit.

4,621,313

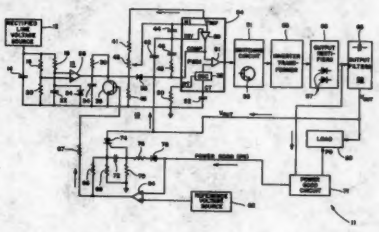
SOFT-START CAPACITOR DISCHARGE CIRCUIT

Kenneth J. Kiteley, Hoffman Estates, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Jun. 28, 1985, Ser. No. 750,350

Int. Cl.[4] H02H *7/122*

U.S. Cl. 363—49 **13 Claims**



1. In a switched mode power supply responsive to a rectified line voltage for providing a DC output voltage and characterized by a soft-start mode of operation for limiting the current in circuit elements in an output stage of the power supply, a soft-start protection circuit comprising:

first comparison means for comparing the rectified line voltage to a first reference voltage and for providing a first signal when the rectified line voltage equals said first reference voltage;

charge storage means coupled to said first comparison means for storing an increasing electrical charge in response to receipt of said first signal;

signal generating means having a variable duty cycle coupled to the output stage and to said charge storage means and responsive to the electrical charge thereon for providing drive signals to the output stage in generating the output voltage therein;

second comparison means coupled to the output stage for comparing the output voltage to a second reference voltage and for generating a shutdown signal when the output voltage is less than said second reference voltage; and

conducting means coupled to said second comparison means and to said charge storage means and responsive to said shutdown signal for discharging said charge storage means when the output voltage is less than said second reference voltage, said conducting means further coupled to said first comparison means and responsive to said first signal for terminating the discharging of said charge storage means when the rectified line voltage equals said first reference voltage.

4,621,314

THYRISTOR CONVERTER CONTROL APPARATUS INCLUDING DIFFERENTIATION ARRANGEMENT TO PREVENT ABNORMAL OPERATION

Takashi Ito, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 17, 1984, Ser. No. 631,817

Claims priority, application Japan, May 30, 1984, 59-108393

Int. Cl. H02H *7/12*; H02M *1/092*

U.S. Cl. 363—54 **11 Claims**

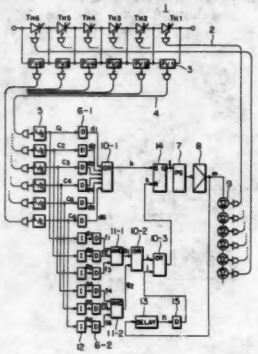
1. An apparatus for controlling a thyristor converter including a plurality of series-connected thyristors comprising:

a plurality of voltage detectors for detecting the presence or absence of voltage applied to said thyristors respectively;

a plurality of differentiation means for differentiating the output signals from said voltage detectors respectively;

signal synthesis means for synthesizing the output signals from said differentiation means by logically combining said output signals, and for judging the presence or absence of the voltage applied to said thyristors based on said output signals from said differentiation means; and

trigger pulse generating means for generating pulses to trigger said thyristors in response to a judgment by the



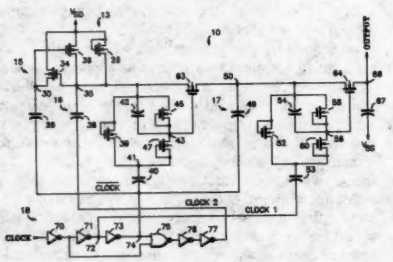
signal synthesis circuit of the presence of the voltage applied to said thyristors.

4,621,315

RECIRCULATING MOS CHARGE PUMP

Herchel A. Vaughn, and Joe W. Peterson, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 3, 1985, Ser. No. 771,919
Int. Cl.[4] H02M *3/155*
U.S. Cl. 363—60 **12 Claims**



1. A circuit for increasing a power supply voltage from a power supply source and providing a boosted output voltage at an output terminal, comprising:

diode means coupled between a first node and a supply terminal adapted to receive the power supply voltage, said diode means having a threshold voltage and preventing current flow from the first node to the supply terminal;

first charge storage means coupled to the output terminal for selectively storing the power supply voltage and a boost voltage to provide the boosted output voltage; and

transistor coupling means having a control electrode, a first current electrode coupled to the first node, and a second current electrode coupled to the output terminal, and a threshold voltage associated therewith;

wherein the improvement comprises:

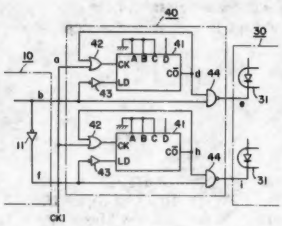
compensation means coupled between the first node and the control electrode of the transistor coupling means, for providing a control voltage to the control electrode sufficiently above the threshold voltage of the transistor coupling means so as to reduce the effective threshold voltage drop between the first node and the output terminal to substantially zero volts.

4,621,316

INVERTER CONTROL CIRCUIT

Michika Uesugi, Fuji, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 19, 1984, Ser. No. 662,562
Claims priority, application Japan, Oct. 20, 1983, 58-196304
Int. Cl.[4] H02M *7/538*
U.S. Cl. 363—132 **9 Claims**



1. An inverter control circuit comprising:

a plurality of switching circuits connected in parallel to direct current power source, each of said switching circuits comprising two serially connected switching elements which complementarily turn on and off upon complementary application of on-control and off-control signals; and

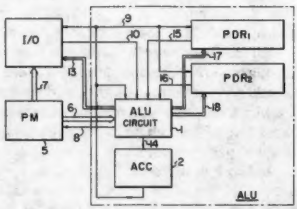
a delay circuit for delaying a rise time of said on-control signal by a predetermined amount comprising a counter for counting clock pulses and generating a signal when the count value of said counter reaches a predetermined value, and a logic curcuit for making, while said on-control signal is applied, said counter execute a count operation and prevent the transmission of said on-control signal until said counter starts generating the output, and for transferring said off-control signal without delay, said delay circuit being provided on a control signal path for said control signal which makes a positive side element and a negative side element in each of said switching circuits viewed from said direct current power source complementarily turn on and off.

4,621,317

ARITHMETIC LOGIC UNIT OF A SEQUENCE CONTROLLER

Toichi Kudo, Yokohama; Takasi Abe, Funabashi, and Seiichiro Ogawa, Ichikawa, all of Japan, assignors to Hitachi, Ltd., Tokyo and Nissan Motor Co., Ltd., Yokohama, both of, Japan

Filed Feb. 22, 1982, Ser. No. 350,614
Claims priority, application Japan, Feb. 27, 1981, 56-26747
Int. Cl.[4] G06F *15/46*
U.S. Cl. 364—147 **5 Claims**



1. An arithmetic logic unit of a sequence controller having an input/output circuit for providing logic status signals of selected input elements and output signals to selected output

elements, and program memory means for storing a sequence program equivalent to a relay sequence having one or more branches for executing sequence control in accordance with the stored sequence program, wherein said sequence program is constituted by a combination of first instructions relating to connection status indicating a start point, a branch start point, a branch continuation, a branch end point and a branch junction point provided in the relay sequence, and second instructions indicating input and output elements provided in the relay sequence; said arithmetic logic unit comprising:

an accumulator for successively storing intermediate results of logical operations and output signals for application to said input/output circuit;

a first push-down register and a second push-down register each capable of shifting bidirectionally and each having a common inlet/outlet for a signal; and

operation control means connected to said accumulator, said program memory means and said first and second push-down registers, and being

(1) responsive to an instruction indicating the start point for shifting a logic signal of a predetermined initial status into said first push-down register;

(2) responsive to an instruction indicating the branch start point for shifting the content stored at that time in said accumulator into said first push-down register;

(3) responsive to an instruction indicating the branch continuation or the branch end point for shifting the content of said accumulator into said second push-down register;

(4) responsive to an instruction indicating the branch continuation followed by an input element for performing a logical AND operation of the output signal from said first push-down register and a selected logical status signal of an input element without a shifting operation of said first push-down register and then storing the AND operation result into said accumulator;

(5) responsive to an instruction indicating the branch end point followed by an input element for performing a logical AND operation of the output signal from said first push-down register and the logical status signal of a selected input element by means of an output shifting operation of said first push-down register followed by storing the AND operation result into said accumulator;

(6) responsive to an instruction indicating the branch continuation followed by an output element for storing the output content from said first push-down register into said accumulator without a shifting operation of said first push-down register;

(7) responsive to an instruction indicating the branch end point followed by an output element for storing the output content from said first push-down register into said accumulator by means of an output shifting operation of said first push-down register; and

(8) responsive to the instruction indicating the branch junction point for performing a logical OR operation of the output signal from said second push-down register and the content of said accumulator by means of an output shifting operation of said second push-down register followed by storing the OR operation result into said accumulator; and

(9) responsive to an instruction indicating an output element for outputting the content of said accumulator to a corresponding output element via said input/output circuit.

4,621,318

MULTIPROCESSOR SYSTEM HAVING MUTUAL EXCLUSION CONTROL FUNCTION

Akira Maeda, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 1, 1983, Ser. No. 462,715

Claims priority, application Japan, Feb. 16, 1982, 57-23330

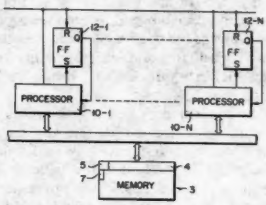
Int. Cl.⁴ G06F *9/18, 9/38*

U.S. Cl. 364—200 **4 Claims**

1. A multiprocessor system comprising:

common memory means having at least one memory area to store a flag of the test-and-set instruction;

a plurality of data processing means connected to said common memory means to effect data transfer with respect to said common memory means, each of said data processing means producing a first signal upon having executed the test-and-set instruction for said memory means to check whether, in a first state, the flag of the test-and-set instruction is set in said memory area or not, setting the flag to the first state and then starting a sequence of data processing operations when it is detected that the flag is set in a second state; and each of said data processing means setting the flag to the second state and producing a second signal after having executed the sequence of data processing operations; and



a plurality of state signals generating means respectively connected to said plurality of data processing means, said plurality of said data signal generating means being the same in number as said plurality of data processing means, each of said plurality of state signal generating means producing an inhibit signal to a corresponding one of said plurality of data processing means in response to the first signal from said corresponding data processing means from re-execution of the test-and-set instruction, and terminating generation of the inhibit signal in response to the second signal from any one of said data processing means, thereby permitting said corresponding data processing means to execute the test-and-set instruction.

4,621,319

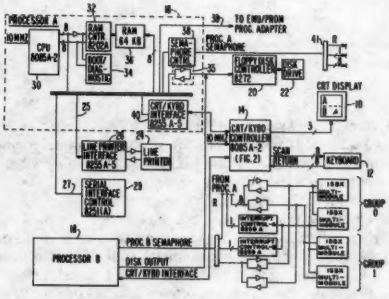
PERSONAL DEVELOPMENT SYSTEM

Jerome M. Braun, Fremont, Calif.; David Chong, Beaverton, Oreg., and Darren Whittaker, Herndon, Va., assignors to Intel Corporation, Santa Clara, Calif.

Filed Sep. 27, 1982, Ser. No. 424,729

Int. Cl.⁴ G06F *15/16*

U.S. Cl. 364—200 **8 Claims**



1. A microprocessor-development system comprising:

a display means;

a keyboard;

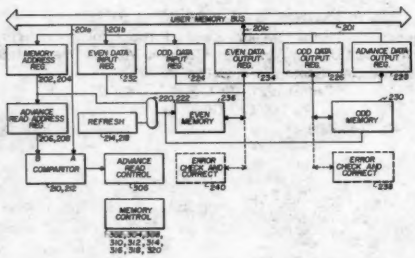
a first processor;
a second processor;
a CRT/keyboard controller connected to said first processor, said second processor, said display means, and said keyboard, said controller including:
first means for storing a full-display frame from said first processor;
second means for storing a full-display frame from said second processor;
third means connected to said first and second means, for causing to be displayed, simultaneously on said display means, a first frame which is part of said first full-display frame from said first processor and a second frame which is part of said second full-display frame from said second processor;
fourth means responsive to actuation of said keyboard, for selectively designating one of said processors as a foreground processor and the other of said processors as a background processor said fourth means further including logic means for maintaining information as to which files each of said first and second processors has open, to thereby facilitate processor-to-processor communication; and,
fifth means connected to said fourth means for transmitting information inputted via said keyboard to said one of said processors designated by said fourth means as said foreground processor to the exclusion of said other processor designated as said background processor;
whereby a task running on said background processor is visible to an operator, enabling said operator to manipulate a task running on said foreground processor by means of said keyboard assigned to said foreground processor while simultaneously monitoring a task running on said background processor.

4,621,320

MULTI-USER READ-AHEAD MEMORY

Daniel D. Holste, Apple Valley, and Lawrence L. Reiners, Eagan, both of Minn., assignors to Sperry Corporation, New York, N.Y.

Filed Oct. 24, 1983, Ser. No. 544,900
Int. Cl.[4] G06F *12/00, 12/16*
U.S. Cl. 364—200 **5 Claims**



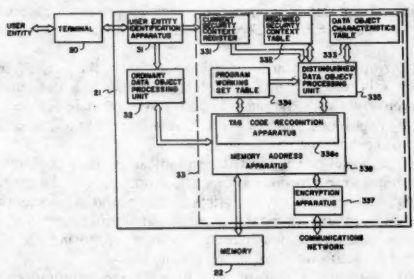
4. A memory system comprising:
read address storage means for storing a remotely supplied memory address which controls the reading of a data word from said memory system,
output means,
first randomly addressable memory means coupled to said read address storage means and to said output means which responds to said memory address if said memory address has a value of N, by reading an addressed data word stored at a first predefined address of said first randomly addressable memory means to said output means,
second ramdomly addressable memory means coupled to said read address storage means and to said output means which responds to said memory address if said memory address has a value of N+1 by reading an addressed data word stored at a second predefined address of said second randomly addressable memory means,
address incrementing and retention means coupled to said read address storage means and to said second randomly addressable memory means for incrementing each memory address N that is stored in said read address storage means by a count of one to an incremented memory address N+1, for storing this incremented memory address and for supplying this incremented memory address to said second randomly addressable memory means,
temporay storage means coupled to said second randomly addressable memory means for receiving a prefetched data word that is read from the second predefined address of said second randomly addressable memory means that matches the incremented N+1 address stored in said address incrementing and retention means, and
address comparison means coupled to said address incrementing and retention means, said temporary storage means and said second randomly addressable means for comparing each supplied memory address having a value N+1 with the incremented address that is stored in said address incrementing and retention means, for causing said temporary storage means to output a prefetched data word stored in said temporary storage means to said output means when a comparison occurs and for causing said second randomly addressable memory means to output a data word stored at the second predefined address defined by the value N+1 to said output means when there is no comparison,
wherein for a particular system as defined herein, if N represents an even integer number, then N+1 represents the next larger odd integer number, and if N represents an odd integer number, then N+1 represents the next larger even integer number.

4,621,321

SECURE DATA PROCESSING SYSTEM ARCHITECTURE

William E. Boebert, and Richard Y. Kain, both of Minneapolis, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 16, 1984, Ser. No. 580,910
Int. Cl.[4] G06F *15/20*
U.S. Cl. 364—200 **24 Claims**



1. A data processing system having protected system files, said data processing system comprising:
memory means for storing logic signal groups;
processing means for manipulating logic signal groups in said memory means in accordance with instruction signal groups;
interaction means for permitting a user to enter instruction signal groups for said processing means;
indentification means coupled to said interaction means for relating preselected attributes with said user;
address means coupled to said interaction means for retrieving a logic signal group associated with an instruction

signal group, said address means also for associating preestablished attributes with said associated logic signal group; and

comparison means coupled to said address means and to said identification means for comparing said preselected attributes with said preestablished attributes, said comparison means preventing said associated logic signal group from being manipulated by said processing

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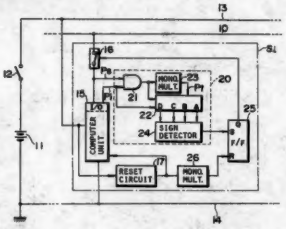
4,621,322

CPU SELF-TEST SYSTEM INCLUDING THE CAPABILITY OF DISCONNECTING A FAULTY CPU FROM THE COMMON BUS OF A PLURAL CPU SYSTEM

Tadashi Suzuki; Hitoshi Takeda, and Norimasa Kishi, all of Yokosuka, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 18, 1982, Ser. No. 349,844
Claims priority, application Japan, Feb. 25, 1981, 56-25461
Int. Cl.⁴ G06F *11/22*
U.S. Cl. 364—200 **5 Claims**



1. A multiple computer system adapted to be connected to a power source and comprising a plurality of computer stations, each of said plurality of computer stations being capable of executing a control program and of using a common data bus to transfer data between itself and other computer stations, each of said plurality of computer stations comprising:

(a) a computer unit within each computer station, each computer unit responsive to initial receipt of power from said power source to disconnect same from said common data bus and to start execution of an initialization program for generating a coded pulse train unique to each computer unit and an enable signal;

(b) a code detection circuit, within said computer station, said code detection circuit receiving said coded pulse train and generating a signal in response to said enable signal when said coded pulse train corresponds to a predetermined pulse train; and

(c) means, responsive to said signal from said code detection circuit, for connecting the computer station to the common data bus, and responsive to the absence of said signal for disconnecting the computer station from the data bus.

4,621,323

MESSAGE TRANSMISSION CIRCUITRY

Steven C. Mayhew, Nashua, N.H., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Mar. 28, 1983, Ser. No. 479,634
Int. Cl.⁴ G06F *11/14*
U.S. Cl. 364—200 **9 Claims**

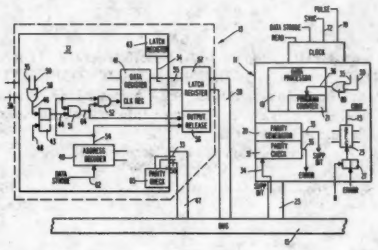
1. A slave circuit to be used in a data communications system which as an interconnecting bus means between a master device and said slave circuit, comprising in combination:

address decoder means connected to said interconnecting bus for responding to particular address signals therefrom to provide activating signals;

data signal storage means connected to said interconnecting bus and connected to receive data signals from said data communication system and designed to hold said data signals for subsequent transmission on said interconnecting bus;

logic circuitry means connected to both said data signal storage means and said address decoder means;

control signal circuitry connected to said logic circuitry means to provide at least first and second control signals thereto whereby in response to said first control signal and



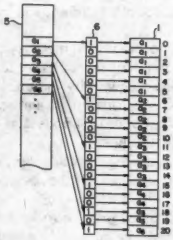
said activating signals said logic circuitry will cause said data signal storage means to transmit data signals during a first time period and whereby in response to said second control signal and said activating signals said logic circuitry means will cause said data signal storage means to retain data signals, which were the basis of a data transmission in said first time period to be the basis for a data transmission during a subsequent time period.

4,621,324

PROCESSOR FOR CARRYING OUT VECTOR OPERATION WHEREIN THE SAME VECTOR ELEMENT IS USED REPEATEDLY IN SUCCESSION

Yasunori Ushiro, Yokosuka; Shigeo Nagashima, Hachioji, and Shun Kawabe, Machida, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 16, 1983, Ser. No. 562,224
Claims priority, application Japan, Dec. 17, 1982, 57-221392
Int. Cl.⁴ G06F *13/00*
U.S. Cl. 364—200 **3 Claims**



1. A vector processor provided with a vector register having a plurality of storage locations each capable of storing vector element data, and in which said vector element data is read out from a main storage for use in performing a vector operation, said vector processor comprising:

first register means connected to receive data from said main storage for latching vector element data read out from said main storage;

second register means for storing control information for each of said storage locations of said vector register indicating whether vector element data in said main storage is to be read out or not for the storing of vector element data in said storage locations; and

control means connected to said second register means and

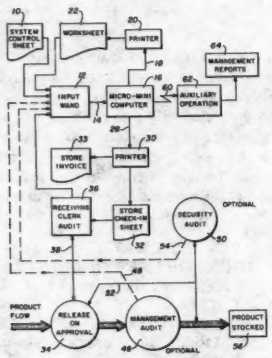
responsive to said control information for selectively controlling the read-out of vector element data from said main storage and the subsequent storing of that vector element data in one of said storage locations of said vector register and in said first register means, or controlling the storing of vector element data which has already been stored in said first register means into a storage location of said vector register.

4,621,325

METHOD FOR MONITORING RECEIPT AND STOCKING OF GOODS IN A DIRECT STORE DELIVERY

Walter L. Naftzger, Dallas, and Charles M. O'Banon, Lewisville, both of Tex., assignors to Information Retrieval Methods, Inc., Dallas, Tex.

Filed Jun. 6, 1984, Ser. No. 617,580
Int. Cl.[4] G06F *15/24*
U.S. Cl. 364—406 **10 Claims**



1. A method for tracing discrepancies of goods occurring during delivery of discrete identifiable units, comprising the steps of:

(a) preparing and storing in a memory on a batch by batch basis a vendor's count of the units in each batch of delivered goods;

(b) preparing and storing in said memory on a batch by batch basis a clerk's count of the units in each batch of goods acknowledged as received by the clerk;

(c) comparing said vendor's count and said clerk's count of the units in each batch of goods and producing a store invoice for each batch;

(d) preparing and storing in said memory a management count of units in selected batches of goods prior to stocking said goods in inventory; and

(e) comparing said store invoice to said management count of units in at least one of said selected batches whereby trends in discrepancies between said vendor's, clerk's and management counts for corresponding batches indicate unlawful or inaccurate handling of said goods.

5. A method for monitoring delivery of goods by a vendor to detect discrepancies and pilferage of goods, comprising the steps of:

(a) scanning precoded bars on a system control sheet to identify the vendor;

(b) storing the scanned vendor identification in a computer;

(c) printing a worksheet having bar code information for use by said vendor;

(d) scanning said worksheet bar code information to record a vendor's count of units in each batch of delivered goods;

(e) storing the scanned worksheet bar code information and vendor's count in said computer;

(f) printing a store invoice for said delivered goods using said stored worksheet bar code information and vendor's count;

(g) scanning a store check-in sheet having bar code information to record a clerk's audit including a count of units in each batch of delivered goods;

(h) storing said clerk's audit information in said computer; and

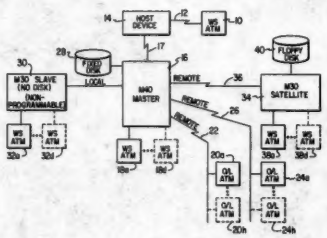
(i) comparing said vendor's count and said clerk's audit information to detect any discrepancies in the counts for said goods.

4,621,326

METHOD OF REDUCING CUSTOMER TRANSACTION TIME IN AN AUTOMATIC TELLER MACHINE BY PARALLEL PROCESSING OF SEQUENCE EVENTS

Joan E. Rawlins, Dallas, Tex., assignor to Docutel/Olivetti Corporation, Irving, Tex.

Filed Mar. 14, 1984, Ser. No. 589,533
Int. Cl.[4] G06F *15/30*
U.S. Cl. 364—408 **5 Claims**



1. A method for completing a customer initiated transaction in an automated teller machine (ATM) having various peripheral devices associated therewith, comprising the steps of:

(a) defining a transaction sequence table describing transaction sequence events;

(b) separating said transaction sequence events into command/request events and response/status events, each of said command/request events having a corresponding response/status event;

(c) ordering said transaction sequence events in said transaction sequence table such that a plurality of command/request events precede their corresponding response/status events;

(d) initiating a first command/request event in said table for commanding/requesting the operation of a first peripheral device associated with said ATM; and

(e) simultaneously repeating step (d) for additional peripheral devices associated with said ATM to initiate simultaneous real-time operation of said various peripheral devices.

4,621,327

ELECTRONIC POWER STEERING METHOD AND APPARATUS

Darrel A. Dolph, Big Rapids; Leonard W. Demski, Reed City; Robert E. Taylor, Cadillac, and Jean-Marie Loisel, Big Rapids, all of Mich., assignors to Nartron Corporation, Reed City, Mich.

Filed Jun. 13, 1984, Ser. No. 620,188
Int. Cl.[4] B62D *5/06*
U.S. Cl. 364—424 **17 Claims**

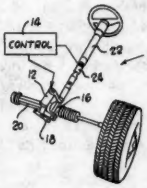
1. In a power steering unit having a motor coupled to a vehicle steering system to assist an operator in maneuvering the vehicle, control apparatus comprising:

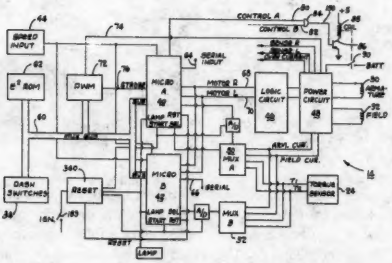
means for monitoring the speed of said vehicle;

means for monitoring a torque applied by said operator

through a vehicle steering mechanism to said steering system;

first and second controllers for calculating a motor energization sequence based upon said speed and said torque wherein said first controller energizes said motor in accordance with said sequence and said second controller is





coupled to said motor to monitor the energization sequence applied to said motor; and

switching means coupled to an output from said second controller to de-activate said motor if the first controller is not energizing the motor in accordance with an energization sequence determined by said second controller.

4,621,328

APPARATUS FOR CONTROLLING A SPEED CHANGE GEAR

Kenji Arai, Ogawa, and Masaharu Inamo, Kawagoe, both of Japan, assignors to Diesel Kiki Co., Ltd., Japan

Filed Apr. 14, 1983, Ser. No. 485,011

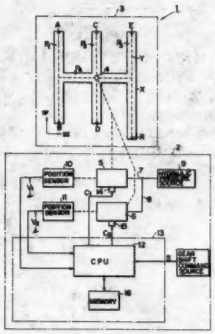
Claims priority, application Japan, Apr. 17, 1982, 57-63234

Int. Cl.[4] F16H *5/28*; B60K *41/18*; G05D *13/34*

U.S. Cl. 364—424.1 **8 Claims**

1. In an apparatus for automatically controlling a gear shift operation having first and second actuators for moving a gear lever connected with a speed change gear in first and second directions through gear shift passages to desired gear shift positions, said passages having defined widths and lengths for the movement of said gear lever, a memory for storing data on desired gear shift positions in said passages, first and second sensors for producing first and second position signals which indicate the actual position in said first and second directions of the gear lever in said passages, and computer means for receiving said first and second position signals, said data on desired gear shift positions, and an input gear shift command signal indicating a desired gear shift position to which the gear lever is to be moved, and for providing movement control signals to said first and second actuators for moving said gear lever to the desired gear shift position,

the improvement comprising said computer means having an updating program for storing updated data in said memory on said desired gear shift positions in said passages to allow optimum movement of said gear lever in said passages based upon said updated data, said updating program including a first part for providing control signals for moving said gear lever across the lengths or widths of said passages and obtaining position signals from



said sensors indicative of the length or width positions of the passages, and a second part for updating the data stored in said memory on the basis of said obtained position signals.

4,621,329

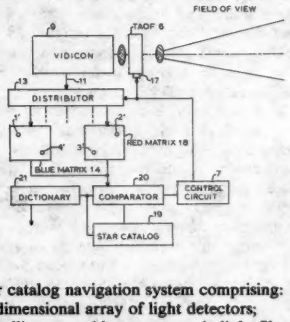
STAR CATALOG NAVIGATION SYSTEM

James J. Jacob, Atherton, Calif., assignor to Itek Corporation, Beverly Hills, Calif.

Filed Dec. 31, 1979, Ser. No. 108,862

Int. Cl.[4] G06F *15/50*

U.S. Cl. 364—455 **12 Claims**



11. A star catalog navigation system comprising:

a. a two-dimensional array of light detectors;

b. a non-collinear tunable acousto-optic light filter having a variable frequency band pass characteristic;

c. comparator control means for enabling said filter to transmit light within selected frequency bands of the light spectrum to said array of light detectors;

d. optical means for transmitting the light image of a star pattern within the field of view of said optical means through said filter and focusing said image upon said two-dimensional array of light detectors;

e. comparator address means including a plurality of matrix means, each associated with a particular frequency band of light, for receiving data indicative of the geometrical shape of said pattern together with the frequency signature of the stars within said star pattern;

f. comparator star catalog means for storing data indicative of reference star patterns together with the frequency signature of the stars comprising said star patterns;

g. comparator means for comparing the signals received by

said comparator address means with the contents of said star catalog means until a correlation signal is produced; and

h. dictionary means responsive to said correlation signal for producing an indication of the position of said star pattern.

4,621,330

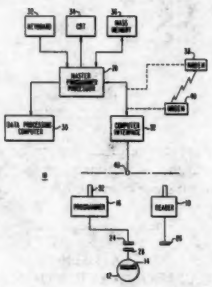
PROGRAMMING SYSTEM FOR PROGRAMMABLE TIME REGISTERING ELECTRIC ENERGY METERS

Scott J. Weikel, Raleigh, N.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 28, 1984, Ser. No. 584,422

Int. Cl.[4] G01R *11/57;* **G06F** *15/20*

U.S. Cl. 364—483 **18 Claims**



1. Apparatus for programming a time-of-use electric energy meter register, comprising:

a portable programmer comprising a sequence controller, data communication means connected to said controller for receiving meter data for ultimate storage in an associated time-of-use meter register, read-write memory means connected to said controller for temporarily storing said meter data to be stored in an associated time-of-use electric energy meter register, meter interface means connected to said controller for transferring said meter data from said read-write memory means to an associated time-of-use meter register, operator input means connected to said controller for permitting an operator to initiate transfer of said meter data through said meter interface means, and a battery-operated power supply providing operating power for said programmer;

a master processor comprising means for receiving operator-entered values of said meter data, processor means for organizing said values into a set of meter data in a predetermined format, means for storing a plurality of said meter data sets, data output means for selectively transmitting said stored meter data sets to said programmer; and

interface means for removably connecting said data output means to said programmer data communication means.

4,621,331

CONTROL SYSTEM FOR GRASPING FORCE OF A MANIPULATOR FOR GRASPING OBJECTS

Kazuhide Iwata, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 28, 1983, Ser. No. 566,396

Claims priority, application Japan, Dec. 28, 1982, 57-227412

Int. Cl.[4] B25J *15/00, 15/02;* **B66C** *1/00*

U.S. Cl. 364—513 **6 Claims**

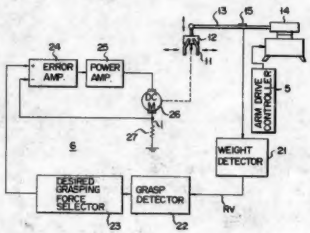
5. A manipulator comprising:

a grasping mechanism for grasping an object with a controllable grasping force, the frictional force between said grasping mechanism and said object varying from static frictional force to dynamic frictional force when a slippage occurs between said grasping mechanism and said object;

an arm mechanism coupled to said grasping mechanism and arranged to be capable of being raised to lift said object grasped by said grasping mechanism;

grasping force control means coupled to said grasping mechanism for controlling a grasping force applied to said grasping mechanism to grasp the object;

weight detecting means coupled to said arm mechanism for detecting a force applied to said arm mechanism when the grasped object is being lifted, the force applied to said arm mechanism instantaneously varying in response to the variation of the frictional force between said grasping mechanism and said object from the statical frictional force to the dynamic frictional force;



grasping detecting means coupled to said weight detecting means for detecting whether or not the grasped object has been lifted by a present force being applied to said grasping mechanism, said grasping detecting means being arranged to detect that said object has not been lifted, in response to the detection of the instantaneous variation of the frictional force between said grasping mechanism and said object by said weight detecting means; and

grasping force selecting means coupled to said grasping force control means and responsive to said grasp detecting means for stepwise increasing a grasping force being applied to said grasping mechanism by said grasping force control means from a predetermined minimum force level until said grasp detecting means detects that the object has been lifted.

4,621,332

METHOD AND APPARATUS FOR CONTROLLING A ROBOT UTILIZING FORCE, POSITION, VELOCITY, SPRING CONSTANT, MASS COEFFICIENT, AND VISCOSITY COEFFICIENT

Koichi Sugimoto, Hiratsuka; Hisaaki Hirabayashi, Yokohama; Shinichi Arai, Yokohama, and Shiyuki Sakaue, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 18, 1984, Ser. No. 621,717

Claims priority, application Japan, Jun. 20, 1983, 58-109171; Nov. 17, 1983, 58-214998

Int. Cl.[4] G05B *13/00*

U.S. Cl. 364—513 **31 Claims**

1. A method for controlling a robot comprising the steps of:

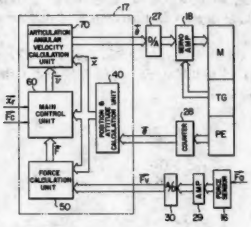
detecting a force applied to a hand of the robot to produce a force signal;

calculating a first value representing a difference between said force signal and a force reference;

calculating a second value representing a product of a difference between a position signal representing-current position and attitude of said hand and a position reference multiplied by a spring constant;

calculating a third value representing a product of a velocity signal representing a current velocity of said hand multiplied by a viscosity coefficient; and

controlling the hand of the robot by generating a command velocity, with the value of said command velocity being



based on said first, second and third values and a coefficient to mass.

4,621,333

METHOD AND APPARATUS FOR CONTROLLING A ROBOT TO PERFORM WEAVING-LIKE MOTION

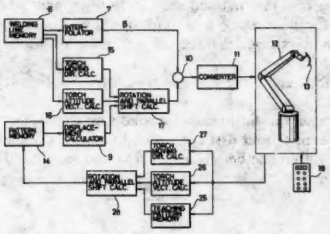
Yuji Watanabe, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

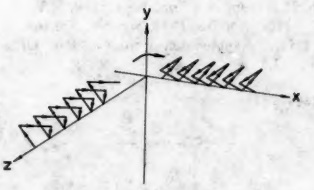
Filed Aug. 31, 1984, Ser. No. 645,966

Claims priority, application Japan, Aug. 31, 1983, 58-159224; Aug. 31, 1983, 58-159225

Int. Cl.⁴ G05B *19/42*; B23K *9/02*

U.S. Cl. 364—513 **5 Claims**





1. A teaching apparatus for an industrial robot having a hand adapted to work while moving along a principle line with subordinate movement with respect to the principle line, comprising:

a teaching box for supplying an instruction to said hand to move said hand to an arbitrary position;

a teaching pattern memory for storing actual pattern information of subordinate movement taught at said arbitrary position by said teaching box;

a hand moving direction vector calculator for calculating a hand moving direction vector at said arbitrary position;

a hand attitude vector calculator for calculating an attitude vector of said hand at said arbitrary position;

a rotation and parallel shift calculator responsive to an output of said hand attitude vector calculator and said hand moving direction vector calculator to transform coordinates of said pattern information stored in said teaching pattern memory into coordinates in a predetermined reference coordinate system; and

a weaving-like pattern memory for storing a pattern produced by said rotation and parallel shift calculator as a reference weaving-like pattern.

4,621,334

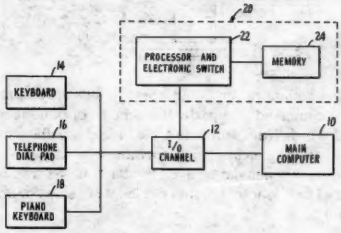
PERSONAL IDENTIFICATION APPARATUS

John D. Garcia, San Francisco, Calif., assignor to Electronic Signature Lock Corporation, Berkeley, Calif.

Filed Aug. 26, 1983, Ser. No. 526,858

Int. Cl.⁴ G06F *1/00*; A04Q *9/00*

U.S. Cl. 364—550 **24 Claims**



1. A method of verifying whether a particular individual is a member of a predetermined group, said method comprising:

generating a first timing vector relating to an authorized individual as a function of the time delays between successive input operations by said authorized individual, said time delays being neurophysiologically determined and unique for each authorized individual;

storing said a first timing vector;

generating a second timing vector of an individual to be identified as a function of the time delays between successive input operations, said time delays being neurophysiologically determined and unique for each individual to be identified; and comparing the first and second timing vectors to determine the statistical similarity therebetween.

4,621,335

REAL TIME RECALL FEATURE FOR AN ENGINE DATA PROCESSOR SYSTEM

Joseph A. Bluish, and Mark B. Hanson, both of South Bend, Ind., assignors to Allied Corporation, Morristown, N.J.

Filed May 31, 1983, Ser. No. 486,976

Int. Cl.⁴ G11B *5/02*; G08E *23/00*; G06F *15/36*

U.S. Cl. 364—550 **5 Claims**

1. An engine data processor system having a real time recall feature, said system comprising:

means for measuring a plurality of operating parameters of an engine in real time;

means for converting the measured operating parameters into a data table having a plurality of separate words, each set of parameters defining an engine profile indicative of the value of the measured parameters;

means for updating said data table at an input cyclic rate with new values of said operating parameters;

means for communicating with a permanent data recordation device over an output channel;

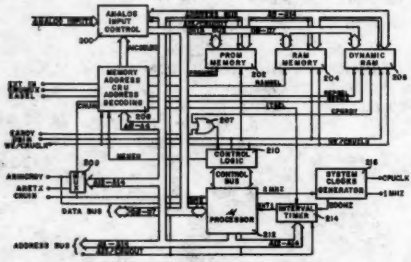
means for outputting words from said data table at an output cycle rate to said communicating means;

auxiliary memory means;

means for controlling said auxiliary memory means, said controlling means being capable of writing information

into said auxiliary memory and reading information from said auxiliary memory;

said controlling means being operable in a first mode communicating said words from said data table at said output cycle rate and storing them in said auxiliary memory;



said controlling means being operable in a second mode set by a command at a particular time to discontinue storing said words from said data table in said auxiliary memory;

said controlling means being operable in a third mode set by a second command at a particular time to transmit said stored words at said output cycle rate to said communicating means.

4,621,336

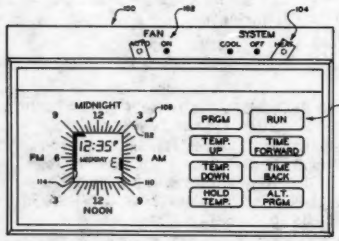
VISUAL DISPLAY OF TIME SCHEDULE IN A PROGRAMMABLE THERMOSTAT

Bernard T. Brown, St. Louis County, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Sep. 17, 1984, Ser. No. 651,098

Int. Cl.[4] G05D *23/32*; G06F *15/20*

U.S. Cl. 364—557 **8 Claims**



1. In a programmable thermostat having digital memory means for storing a time-temperature schedule defining two different temperatures to be maintained during different time periods in a 24-hour time span, the improvement comprising display means including 24-hour time span indicia and an electro-optical display, said electro-optical display including a plurality of display elements arranged contiguously on its perimeter and adjacent to said time span indicia, each of said display elements, in cooperation with said time span indicia, representing a specific duration of time, said display elements being selectively energized in accordance with the stored time-temperature schedule such that those of said display elements that are energized provide for a continuous visual indication of the time periods during which one of the two stored temperatures is to be maintained.

4,621,337

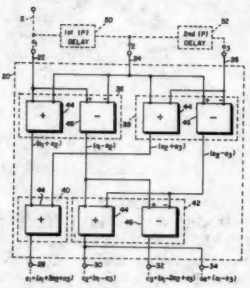
TRANSFORMATION CIRCUIT FOR IMPLEMENTING A COLLAPSED WALSH-HADAMARD TRANSFORM

Billy E. Cates; Ronald S. Cok, and Bryce E. Bayer, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 11, 1983, Ser. No. 522,285

Int. Cl.[4] G06F *7/28, 7/36, 15/332*; G06K *9/36*

U.S. Cl. 364—727 **7 Claims**



1. A unit transformation circuit for transforming three discrete input signals into a set of transform coefficient signals, said circuit comprising:

means for generating a first sum signal and a first difference signal from the first and second discrete input signals;

means for generating a second sum signal and a second difference signal from the second and third discrete input signals; and

means for generating a set of transform coefficient signals from

(A) the sum of said first and second sum signals,

(B) the sum of said first and second difference signals, and

(C) the difference between said first and second difference signals.

4,621,338

CMOS ADDER USING EXCLUSIVE OR AND/OR EXCLUSIVE-NOR GATES

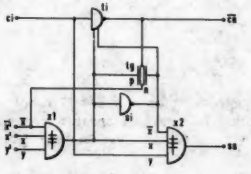
Arnold Uhlenhoff, Emmendingen, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Apr. 13, 1984, Ser. No. 600,169

Claims priority, application European Pat. Off., Apr. 15, 1983, 83103653.8

Int. Cl.[4] G06F *7/50*

U.S. Cl. 364—784 **3 Claims**



1. A CMOS full-adder stage having first inputs including two sub-inputs for a first signal to be added and a second input for a second signal to be added, and with a carry input for an uninverted carry signal, comprising:

first and second exclusive-OR (EXOR) gate implemented using complementary metal-oxide-semiconductor technology (CMOS technology), each comprising:

a first sub-input of a first input and an associated second

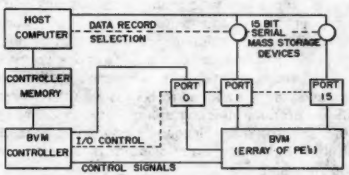
sub-input for receiving inverted and uninverted two sub-inputs for one digital signal, respectively;
a second input for receiving a second digital signal in uninverted form;
a first transistor of one conductivity type having its gate connected to said first sub-input;
a second transistor having its gate connected to said second sub-input;
a third transistor of a second conductivity type having its gate connected to said second input;
a fourth transistor of said one conductivity type;
a gate output coupled to one channel terminal of each of said first, second, third and fourth transistors;
a second channel terminal of said second transistor being connected to said second input;
a second channel terminal of said third transistor being connected to said second sub-input;
said second transistor being of said second conductivity type;
the gate of said fourth transistor being connected to said second input;
the second channel terminal of said fourth transistor being connected to said first sub-input;
the gate of said first transistor being connected to the second channel terminal of said fourth transistor; and
the second channel terminal of said first transistor being connected to said second input, said stage further comprising:
a clocked inverter;
a static inverter;
a transmission gate;
wherein said first signal to be added is applied to said first sub-input and said second sub-input of said first EXOR in uninverted form and inverted form, respectively, and said second signal to be added is applied to said second input of said first EXOR;
said first sub-input of said second EXOR is connected to said output of said first EXOR;
said carry input is connected to said second input of said second EXOR and to the signal input of said clocked inverter;
said output of said first EXOR is connected to the input of said static inverter, to the first clock input of said clocked inverter, and to the first clock input of said transmission gate;
the second clock input of said transmission gate together with the second clock input of said clocked inverter being connected to the output of said static inverter;
the output of said clocked inverter is the carry output;
the output of said second EXOR being the sum output; and
the switching path of said transmission gate is connected between said second sub-input and said carry output.

4,621,339
SIMD MACHINE USING CUBE CONNECTED CYCLES NETWORK ARCHITECTURE FOR VECTOR PROCESSING

Robert A. Wagner, Durham, N.C., and Charles J. Poirier, Red Bank, N.J., assignors to Duke University, Durham, N.C.

Filed Jun. 13, 1983, Ser. No. 503,654
Int. Cl.[4] G06F *15/16*
U.S. Cl. 364—900 **7 Claims**

1. A single instruction multiple data processor comprising:
a plurality of processing elements, interconnected in a Cube Connected Cycle Network design and using interprocessor communication links which carry one bit at a time in both directions simultaneously;
controller means for controlling each of said plurality of processor elements which feeds each of said processor elements identical local memory addresses, identical switching control bits, identical Boolean function selection codes, and distinct activation control bits, depending on each of said processor's position in said Cube Connected Cycles Network in a prescribed fashion; and
a plurality of input/output devices connected to said network by a plurality of switching devices wherein,
each of said plurality of processing elements comprises:
two single-bit accumulator registors (A, B);
two Boolean function generator units, each of which computes any one of 2^8 possible Boolean functions of three Boolean variables as specified by Boolean function codes sent 2 at a time by said controller to each of said processing elements;

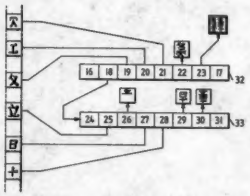


switching circuit means controlled by said controller which select the three inputs to the logic function generators and to which switching circuitry provides that the output of one of said generators is fed to a first one of said registers (B) and the output of the other generator is fed to a second one of said registers (A) and an addressed memory cell of a local memory wherein said local memory consists of at least k bits and at most p bits where p is chosen to be appropriate to VLSI technology so that the space on a VLSI chip required by an entire processing element is at least one-half devoted to the processing elements's memory.

4,621,340
METHOD FOR CONSTRUCTION AND DISPLAY OF IDEOGRAPHIC CHARACTERS

Cornel Pokorny, Accum, and Peter Tillich, Wilhelmshaven, both of Fed. Rep. of Germany, assignors to Olympia Werke AG, Wilhelmshaven, Fed. Rep. of Germany

Filed Aug. 27, 1982, Ser. No. 412,798
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1981, 3134282
Int. Cl.[4] G06F *12/08, 15/62, 3/14*
U.S. Cl. 364—900 **19 Claims**



1. In a method for constructing ideographic characters by means of a character generator and displaying such characters with the use of a display device coupled to the character generator, the display device having a standard character area for the display of ideographic characters, said method comprising:
storing in the character generator addressable data defining character components used for forming ideographic characters of a given set of ideographic characters, and addressable construction rules, each construction rule comprising a predetermined sequence of operands and operators which when processed in sequence define an ideographic character, the operands including addresses for directly accessing data defining character components of the ideographic characters and addresses for other construction rules which when processed define character

components of the ideographic characters, and the operators comprising instructions for the desired position and size of the character components identified by the operands;

feeding a character code into the character generator for selecting a construction rule corresponding with a selected ideographic character to be displayed; and

sequentially processing the predetermined sequence of operands and operators of the selected construction rule, said processing including:

(1) determining, for each operand as it is reached in the sequence for processing, whether such operand is an address for directly accessing data defining a character component or an address for another construction rule;

(2) accessing the data defining a character component if the operand comprises an address for directly accessing data;

(3) immediately processing the other construction rule, if the operand comprises an address for such other construction rule, to produce an ideographic character defined by such other construction rule, such ideographic character constituting a character component of the selected construction rule; and

(4) processing the remainder of the selected construction rule by manipulating and storing the respective character components produced by steps (2) and (3) according to the size and position information contained in the operators of the remainder of the selected construction; and

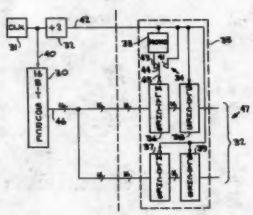
emitting display control signals by reading out the stored character components for actuating the display device for displaying the character components identified by the operands in the standard character area of the display device according to the position and size information contained in the instructions of the operators.

4,621,341

METHOD AND APPARATUS FOR TRANSFERRING DATA IN PARALLEL FROM A SMALLER TO A LARGER REGISTER

Bernard J. New, Los Gatos, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Aug. 24, 1984, Ser. No. 644,403
Int. Cl.[4] G06F *3/00*
U.S. Cl. 364—900 **15 Claims**



1. A method of transferring data words from a smaller to a larger register, said larger register comprising a first and a second set of master latches, each having an input, a first and a second set of slave latches, each having an input, and a means for coupling said latches to a source of clock pulses, comprising:

(a) transferring a first word from said smaller register to said inputs of said first set of master latches which is valid at said inputs of said first set of master latches for a predetermined period of time between the leading edges of adjacent first and second ones of said clock pulses and for a predetermined period of time before and after the trailing edge of said first clock pulse;

(b) latching said first word in said first set of master latches in response to and at a predetermined time following said trailing edge of said first clock pulse; thereafter

(c) transferring a second word from said smaller register to said inputs of said second set of master latches which is valid at said inputs of said second set of master latches for a predetermined period of time between the trailing edges of said first and said second clock pulses and for a predetermined period of time before and after the leading edge of said second clock pulse;

(d) latching said second word in said second set of master latches in response to said leading edge of said second clock pulse; and thereafter

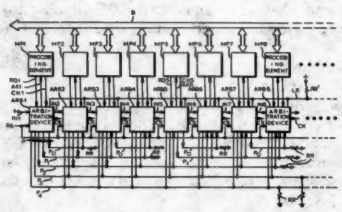
(e) latching said first and said second words in said first and said second sets of slave latches in response to said trailing edge of said second clock pulse.

4,621,342

ARBITRATION CIRCUITRY FOR DECIDING ACCESS REQUESTS FROM A MULTIPLICITY OF COMPONENTS

Giuseppe N. Capizzi, Brandizzo, and Marcello Melgara, Valenza, both of Italy, assignors to CSELT Centro Studi E Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Feb. 1, 1984, Ser. No. 575,837
Claims priority, application Italy, Feb. 3, 1983, 67111 A/82
Int. Cl.[4] G06F *9/46*
U.S. Cl. 364—900 **11 Claims**



1. In a data-handling system with a multiplicity $n=2^m$ of components of different ranks served by a common data bus alternatively accessible by said components in an order of precedence based on their ranks,

the combination therewith of a chain of n mutually identical arbitration devices respectively associated with and individually connected to said components, said arbitration devices being interlinked by a priority bus with m lines having a binary-tree structure including a first line connected to all n devices and an m^{th} line divided into n/2 sections each connected to a pair of adjacent devices, said devices following one another in a predetermined ranking order of the associated components,

each of said arbitration devices comprising:

register means for storing an m-bit priority code initially assigned to the respective device, the priority codes initially assigned to consecutive devices having numerical values varying progressively in conformity with said ranking order of the associated components;

normally blocked gating means inserted between said priority bus and an output circuit of said register means for transmitting the stored priority code to said priority bus in the presence of an access request from the associated component;

comparison means connected to said priority bus and to said output circuit for detecting an equality between the transmitted priority code and the state of energization of the lines of said priority bus in the presence of said access request, an arbitration device associated with a higher-ranking component modifying said state of energization by an overriding priority code simultaneously transmitted to the priority bus; and

a control unit responsive to said access request for unblocking said gating means and sending a consent signal to the associated component in the presence of an equality deter-

mination by said comparison means, said consent signal enabling the associated component to access said data bus, each arbitration device further comprising calculating means having reference inputs connected to said priority bus inserted in series with a normally inactive driver in a loop between said output circuit and an input circuit of said register means for reloading same upon activation of said driver by a command from said control unit, said calculating means implementing the Boolean equation

$$d_j = [\overline{d_{j+1}} * p_j] \; XOR \; r_j$$

where * stands for the AND function, XOR stands for the Exclusive-OR function, p_j represents the binary state of energization of the j^{th} line of said priority bus, r_j is the logical value of the j^{th} bit of the priority code stored in said register means, d_j is the j^{th} bit of a modified code elaborated by said calculating means, and j is an integer ranging from 1 through m, with $d_{j+1}=1$ for j'm, said calculating means enabling recurrent modification of the stored priority code by a periodic energization of said priority bus with a predetermined reference code.

4,621,343

CIRCUIT ARRANGEMENT FOR DETECTING ERROR IN PRINT CONTROL APPARATUS

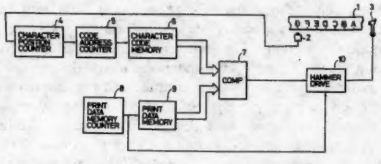
Toshiaki Fujieda, and Kazuyuki Kubo, both of Katsuta, Japan, assignors to Hitachi Koki Company, Limited, Tokyo, Japan

Filed Aug. 26, 1983, Ser. No. 526,771

Claims priority, application Japan, Aug. 27, 1982, 57-149758; Sep. 3, 1982, 57-154158

Int. Cl.⁴ G06F *3/12*

U.S. Cl. 364—900 **7 Claims**



1. A circuit arrangement for detecting abnormal conditions in a printer of the type arranged to impact type characters carried on a type carrier by means of a plurality of print hammers, where said print hammers are selectively driven through comparison between data from a character code memory, from which character codes corresponding to the type characters are read out in accordance with an address signal from a first address counter, and data from a print data memory in which data indicative of characters to be printed is temporarily stored, said printer having a detector for detecting character marks on said type carrier and a character position counter for counting detected character marks to produce an output signal indicative of the count of said character marks for driving said first address counter, said comparison being performed by effecting a plurality of subscans in each of which print data of predetermined print positions are compared with character codes of predetermined character positions so that said plurality of subscans constitute a print scan effected each time said type characters move to print by the character pitch, said subscans being effected in response to count up signals from a print control circuit which is responsive to the detected character marks, said print data memory being driven by a second address counter responsive to another count up signal from said print control circuit, said print control circuit producing subscan flag data indicative of the numerical order of said subscans, said subscan flag data being used for preloading data related to subscans in said first and second address counters, said circuit arrangement comprising:

(a) a flag storage for storing identical flag data at addresses to be read out on the same subscan, addresses of said flag storage being arranged to be designated by said first address counter so that each of said flag data is read out simultaneously with each of said character codes of said character code memory;

(b) first means for adding several lower bits of output data from said character position counter to several lower bits of output data from said print control circuit; and

(c) second means for comparing a result of addition from said first means with said flag data from said flag storage for producing an error signal on anticoincidence.

4,621,344

MAGNETIC BUBBLE DEVICE

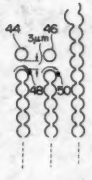
Toshihiro Sato; Ryo Suzuki, both of Hachioji; Tadashi Ikeda, Kanagawa; Teruaki Takeuchi, Kokubunji, and Yutaka Sugita, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 8, 1984, Ser. No. 669,427

Claims priority, application Japan, Nov. 11, 1983, 58-210853

Int. Cl.⁴ G11C *19/08*

U.S. Cl. 365—36 **18 Claims**



1. A magnetic bubble device comprising:

a propagation track formed through ion-implantation, said propagation track being defined by an ion-implanted area; and

a dummy pattern disposed independently of said propagation track and enclosed by said ion-implanted area, said dummy pattern being disposed in the vicinity of a corner of said propagation track where the propagation direction of magnetic bubbles is changed, said dummy pattern enabling a phase at which a magnetic pole is switched at said corner portion of said propagation track to be made substantially equal to a phase at which a magnetic pole is switched at a portion of said propagation track other than said corner portion.

4,621,345

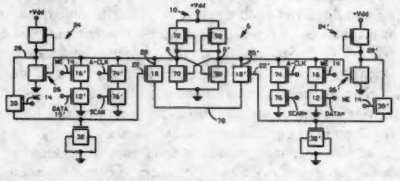
SOFT ERROR PROTECTION CIRCUIT FOR A STORAGE CELL

John S. Bialas, Jr., Manassas; Richard J. Daniels, Dumfries, and Joseph W. Yoder, Fairfax, all of Va., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1984, Ser. No. 682,120

Int. Cl.⁴ G11C *7/02, 11/40*

U.S. Cl. 365—205 **6 Claims**



1. A soft error protection circuit for a storage cell having a

first node and a second node which are respectively connected to a charging source, said first node being selectively charged at least during a write interval, to represent a stored, first binary logic state for said storage cell, comprising:

an insulated gate, field effect capacitor having a diffusion electrode connected to said second node and having a gate electrode, for selectively loading said second node with an additional capacitance;

an inverter circuit having an input connected to said second node and an output connected to said gate electrode of said capacitor, for applying a capacitance enhancing bias to said gate electrode in at least a read interval following said write interval, when said first binary logic state has been stored in said storage cell, to apply said additional capacitance to said second node;

said charging source supplying charge to both said first node and said second node at least following a soft error event which has caused said first node to become at least partially discharged during said read interval;

said additional capacitance applied to said second node preventing said second node from recharging as fast as said first node following said soft error event, by sinking a portion of the charge supplied from said charging source to said second node;

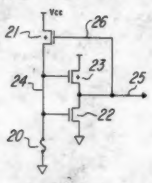
whereby said first node will resume its previously charged condition, thereby preserving the stored logic state of said storage cell following a soft error event.

4,621,346

LOW POWER CMOS FUSE CIRCUIT

Hugh P. McAdams, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 20, 1984, Ser. No. 652,378
Int. Cl.[4] G11C *13/00*
U.S. Cl. 365—227 **9 Claims**



1. A fuse circuit for a low-power semiconductor memory device or the like, comprising:

a fuse device which is selectively rendered conductive or non-conductive,

a power supply having first and second terminals,

an inverter circuit having first and second transistors of opposite conductivity type, each transistor having a source-drain path and a gate, the source-drain paths of the transistors being connected in series between said first and second terminals of the power supply, the gates being connected to an input node, the juncture of said source-drain paths providing an output node,

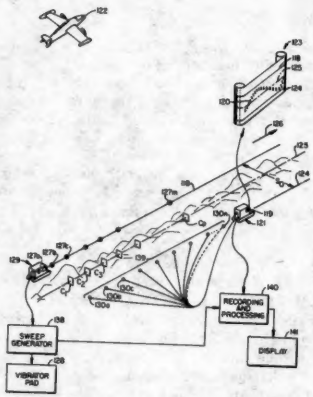
a third transistor having a source-drain path connecting said input node to one of said first and second terminals of the power supply, and having a gate connected to said output node, said fuse device being connected between said input node and the other of the first and second terminals of said power supply.

4,621,347

METHOD OF ATTENUATING SEA ICE FLEXURE NOISE DURING SEISMIC SURVEYS OF PERMAFROST REGIONS INVOLVING A PRECURSOR AERIAL AND/OR SATELLITE MAPPING STEP

William J. Ostrander, Benicia, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Oct. 31, 1983, Ser. No. 547,701
Int. Cl.[4] G01V *1/38, 1/20*
U.S. Cl. 367—21 **11 Claims**



1. Method of improving resolution of seismic data collected in a transition zone of a permafrost region between a frozen land mass and an adjacent sea-ice region, said data being collected by common midpoint (CMP) collection methods including sequentially activating at least one conventional vibratory source at a series of sourcepoint locations across the surface of said permafrost region in which amplitude and phase spectra of the generated energy are controlled so that said generated energy changes smoothly as a function of time, and redundantly collection reflections thereof via a series of receivers at a plurality of receiver stations to provide 2-dimensional multifold coverage of the subsurface along a survey line, comprising the steps of:

(a) adopting a survey strategy wherein said sourcepoint locations established for said at least one vibratory source, are always separated from said receiver stations by one or more ice fracture areas formed on or about the surface of the along said survey line, by mapping said one or more ice fracture areas in the vicinity of the permafrost region to be mapped, using images of the such area obtained from an overflying manned aircraft or unmanned satellite and directing the placement of sourcepoint and receiver station locations on a systematic basis wherein said one or more ice fracture areas are always located between said one vibratory source and said series of receivers along said survey line, during seismic data collection but always in the general direction of said established line of survey;

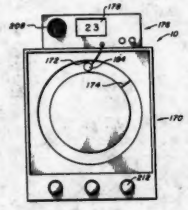
(b) generating seismic field records by positioning and employing said at least one vibratory source and said series of receivers in accordance with the collection strategy of step (a) such that individual sourcepoint-receiver station locations can be redundantly associated with a selected number of traces to form a series of CMP gathers associated with said survey line but wherein generated flexure vibrations associated with activation of said at least one vibratory source has been surprisingly attenuated by passage through said one or more ice fracture area whereby resolution of seismic reflection events associated with and depicted in said each trace, is much improved.

4,621,348

TALKING DEPTH SOUNDER

Robert K. Tendler, 19 Lawrence Ave., Chestnut Hill, Mass. 02167

Continuation-in-part of Ser. No. 412,939, Aug. 30, 1982, Pat. No. 4,489,405. This application May 9, 1984, Ser. No. 608,465
The portion of the term of this patent subsequent to Dec. 18, 2001, has been disclaimed.
Int. Cl.[4] G01S 7/56
U.S. Cl. 367—116 6 Claims



1. Apparatus for converting a depth sounder having a case wherein electromagnetic radiation is produced in providing a depth indication into one in which depth is periodically called out without access to the interior of said case comprising:

means exterior to said case for sensing the electromagnetic radiation proudced by said depth sounder in providing said depth indication;

means for converting information represented by the sensed electromagnetic radiation into a number; and,

means for converting the number into a speech equivalent.

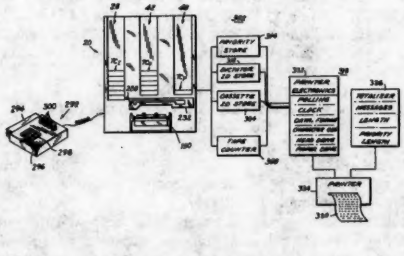
2. The apparatus of claim 1 wherein said depth sounder includes a display having an element which is driven to emit electromagnetic radiation, wherein said sensing means includes means for sensing pulses of electromagnetic radiation associated with driving said element, and wherein said converting means includes means for ascertaining the time difference between said sensed pulses.

4,621,349

MICROCASSETTE CHANGER AND PRINTER APPARATUS

Willy M. Sander, Stamford, Conn., assignor to Dictaphone Corporation, Rye, N.Y.

Filed Jul. 9, 1984, Ser. No. 629,156
Int. Cl.[4] G11B 15/68, 31/00, 23/30
U.S. Cl. 369—25 10 Claims



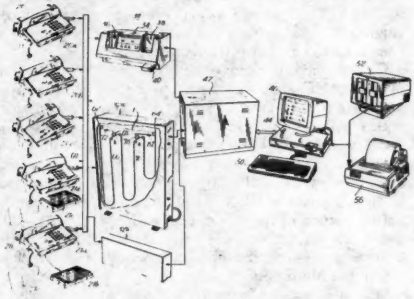
1. Apparatus for use with a dictation system of the type including a changer device having an input stack for storing a plurality of individual recording media having medium-identifying indicia thereon, a recording deck for recording dictated messages onto a respective recording medium, an output stack for storing recording media onto which dictated messages have been recorded, and a priority store for receiving a recording medium that has been designated a priority medium, said changer device also having medium transport means for transporting an individual recording medium from said input stack to said recording deck and for transporting a recording medium from said recording deck to said output stack, and priority transport means for transporting the recording medium which last had a dictated message recorded thereon to said priority store if the last-mentioned medium had been designated a priority medium, said changer device further having optical reading means for reading the identifying indicia on the recording medium that is transported from said input stack to said recording deck; said apparatus comprising identification storage means responsive to the identifying indicia read by said optical reading means for storing the identity of the recording medium that is transported to said recording deck from said input stack; message counting means for counting the number of dictated messages that are recorded on the recording medium that has been transported to said recording deck; message length registering means for registering the total length of the dictated messages that are recorded on the last-mentioned recording medium; time-of-day means for providing time-of-day data; and print means responsive to the transporting of said last-mentioned recording medium from said recording deck to said output stack to provide a printed record of the identity of said last-mentioned recording medium, the number and total length of dictated messages that are recorded on said last-mentioned recording medium, and the time-of-day at which said last mentioned recording medium is transported from said recording deck to said output stack.

4,621,350

RECORDING AND DICTATION SYSTEM

Gary S. Sevitsky, Bayside, N.Y.; Kevin L. Short, Bridgeport, and Robert T. Paulson, Trumbull, both of Conn., assignors to Dictaphone Corporation, Rye, N.Y.

Filed May 20, 1983, Ser. No. 496,408
Int. Cl.[4] G11B 19/02
U.S. Cl. 369—29 34 Claims

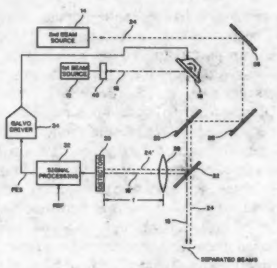


1. In an information processing system having plural recorders on which information jobs are recorded and at least one recovery station connectable to said recorders for recovering information jobs therefrom, apparatus for connecting said at least one recovery station to preselected ones of said recorders in succession to recover the information jobs therefrom, comprising storage means for storing indications of said preselected recorders to which said at least one recovery station is to be connected; criteria establishing means for establishing the criteria on which said at least one recovery station is to be connected to said preselected recorders; selecting means for selecting one of said preselected recorders in accordance with the established criteria; connecting means for connecting said at least one recovery station to the selected recorder for recovering information jobs therefrom; and advancing means responsive to the completed recovery of information jobs for advancing said selecting means to select the next preselected recorder in accordance with said established criteria.

4,621,351
BEAM ALIGNMENT SYSTEM

James W. Baer, Boulder County; Henry H. Hoshiko, Laramer County; Robert P. McIntosh, Boulder County; Charles M. Reilly, Boulder County; Paul M. Romano, Boulder County, and James W. Hargarten, Boulder County, all of Colo., assignors to Storage Technology Partners II, Louisville, Colo.

Filed Jul. 6, 1984, Ser. No. 628,684
Int. Cl.[4] G11B 7/00
U.S. Cl. 369—44 15 Claims



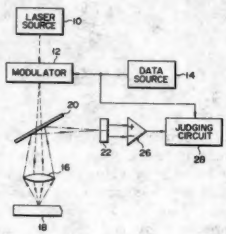
1. A beam alignment system comprising:
a first optical path through which a first beam is directed;
a second optical path through which a second beam is directed;
steering means for controlling the position of one of said first and second beams within its optical path in response to an alignment signal;
means for joining the second optical path to the first optical path at a desired point along the first optical path, both said first and second beams thereby passing through a shared portion of the first optical path;
sensing means for sensing the relative alignment between the first and second beams as they pass through the shared portion of the first optical path, and for generating said alignment signal in response to this sensed alignment as compared to a prescribed alignment;
beam splitting means interposed in the shared portion of the optical path for directing a portion of the first beam from said shared portion of the first optical path to a third optical path, and for also directing a portion of the second beam from said shared portion of the first optical path to the third optical path, the alignment of the first and second beam portions in the third optical path being proportional to the alignment of the first and second beams within the shared portion of the first optical path;
detector means for generating a first signal indicative of the alignment between the first and second beam portions within said third optical path;
comparison means for comparing said first signal with a prescribed reference signal and for generating said alignment signal to indicate the error therebetween;
whereby the first and second beams are maintained in a prescribed alignment relative to each other as they travel along the first optical path.

4,621,352
OPTICAL MEMORY DEVICE

Kiichi Kato, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 454,263, Dec. 29, 1982, abandoned.
This application Jun. 19, 1985, Ser. No. 746,459
Claims priority, application Japan, Jan. 11, 1982, 57-2493
The portion of the term of this patent subsequent to Nov. 19, 2002, has been disclaimed.
Int. Cl.[4] G11B 27/36, 7/00
U.S. Cl. 369—54 5 Claims

1. An optical memory device for recording and reproducing signals on an amplitude detection type disc-type data recording medium, and which detects erroneous data writing, comprising:
radiating means for radiating a recording light beam which is modulated in accordance with recording data;
objective lens means for focusing the light beam from said radiating means onto said recording medium, said recording medium being arranged in a focal plane of said objective lens means, and said recording medium being movable relative to the focused light beam;
photosensing means for detecting the light beam radiated from said radiating means and reflected by the recording medium, said photosensing means being arranged at a focal point of said objective lens means and including first and second segments placed so that one follows the other along a direction corresponding to the direction of rela-



tive movement between said recording medium and the focused light beam;
subtracting means coupled to said photosensing means for calculating a difference between outputs from said first and second segments of said photosensing means, said first and said second segments and said subtracting means being operative so that said subtracting means produces an output corresponding to data recorded by the focused light beam on the recording medium after the data is recorded by said light beam and the recording medium moves relative to said light beam; and
judging means coupled to the output of said subtracting means and to a source of the recording data for detecting an erroneous writing operation in accordance with the output from said subtracting means and the source of the recording data.

4,621,353
OPTICAL MEMORY SYSTEM PROVIDING IMPROVED FOCUSING CONTROL AND IMPROVED BEAM COMBINING AND SEPARATING APPARATUS

Robert L. Hazel, Thousand Oaks, and Gilbert Y. Chan, Agoura, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Sep. 9, 1982, Ser. No. 416,770
The portion of the term of this patent subsequent to Dec. 17, 2002, has been disclaimed.
Int. Cl.[4] G11B 7/00
U.S. Cl. 369—112 10 Claims

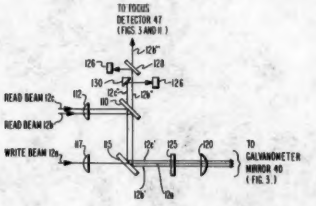
1. In an optical storage system including an optical storage medium, the combination comprising:
first means for providing a writing radiation beam for producing optically detectable changes in said medium;
second means for providing a reading radiation beam for reading said optically detectable changes as a result of changes produced in the reading beam after reflection from said medium;
means providing for relative movement between said beams and said medium;
optical detection means for detecting changes in a reflected beam applied thereto;

focus detection means for detecting the quality of focusing; and

third means to which said beams are applied for combining said recording and reading beams, focusing the combined beams onto predetermined areas of said medium, separating the reflected beams after reflection from said medium, and directing at least a portion of the separated reflected reading beam to said optical detection means and to said focusing means;

said third means including a spatial combining and separating device comprising a thin transparent element having a reflective coating on one side with an opening in the reflective coating extending to said transparent element, the directions of said beams being chosen in conjunction with the positioning of said element so that the original and reflected writing beams pass through said device in opposite directions via said element and said opening while the original and reflected reading beams impinge on said reflective coating and are reflected thereby; and

said focus detection means including means for separating the beam directed thereto into first and second beams;



said focus detector also including a first optical detector to which said first beam is directed and a second optical detector to which said second beam is directed, each detector providing an electrical output signal having a magnitude indicative of the diameter of the beam applied thereto;

said focus detection means further including circuit means to which the outputs of said detectors are applied for producing a focus error signal having a value dependent on the relative values of the detector outputs applied to said circuit means;

said detectors being constructed, arranged and located so that when said reading beam is in proper focus on said medium said focus error signal is substantially zero and when said reading beam is out of focus in a first direction said focus error has one polarity and when said reading beam is out of focus in the opposite direction said focus error signal has a second polarity; and

control means coupled to said directing and focusing means for varying the focusing of said beams on said medium in response to said focus error signal.

4,621,354

DTMF RECEIVER SENSE AND CONTROL MAINTENANCE ARRANGEMENT

Leo V. Jones, Jr., Glendale, and A. Lee Walsh, Phoenix, both of Ariz., assignors to GTE Communication Systems Corporation, Phoenix, Ariz.

Filed Dec. 21, 1984, Ser. No. 685,197
Int. Cl.[4] H04J *1/16, 3/14, 3/12*
U.S. Cl. 370—13 **7 Claims**

1. In a telecommunications switching system having a network clock, a DTMF receiver maintenance arrangement is connected to a plurality of DTMF receivers which interface customers to said switching system for transmitting data to said switching system, said DTMF receiver maintenance arrangement operable for determining proper operation of a DTMF receiver arrangement, said DTMF receiver maintenance arrangement comprising:

a processor;

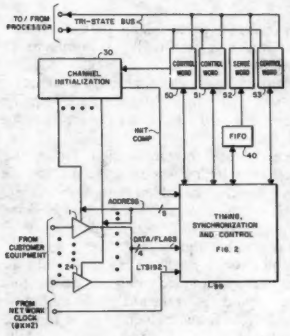
control means connected to said processor, said control means being operated to store and to transmit data from said processor and to said processor;

sense means connected to said processor, said sense means being operated to store data and to transmit said stored data to said processor;

sequencing means connected to said network clock, said sequencing means being operated in response to said network clock to produce a plurality of regularly defined time slots during a DTMF receiver sampling cycle;

last look means connected to said plurality of DTMF receivers, to said sequencing means and to said network clock, said last look means being cyclically operated during each said time slot in response to said sequencing means to produce and to store an indication of whether a particular DTMF receiver has been previously sampled for valid data during a current DTMF receiver sampling cycle;

generating means connected to said control means, to said last look means and to said sequencing means, said generating means being operated in response to said indication of said last look means that said particular DTMF receiver has been previously sampled during said current DTMF



receiver sampling cycle, to inhibit production of a write signal and said generating means being further operated in response to an indication of said last look means that said particular DTMF receiver is to be sampled during a corresponding time slot of said current DTMF receiver sampling cycle, to produce said write signal;

storage means connected to said plurality of DTMF receivers, to said sequencing means, to said generating means and to sense means, said storage means being operated in response to said write signal to store said data from a particular DTMF receiver druing said corresponding time slot and said storage means being further operated to transmit said stored data of each DTMF receiver to said sense means for retransmission to said processor;

maintenance means connected to said control means, to said sequencing means, to said last look means, to said generating means and to said storage means, said maintenance means being operated in response to a request from said processor to transmit maintenance data to said storage means during a particular specified time slot for said retransmission to said processor; and

said processor being operated in response to said retransmitted data to compare said retransmitted data with said maintenance data for determining said proper operation of said DTMF receiver arrangement.

4,621,355

METHOD OF SYNCHRONIZING PARALLEL CHANNELS OF ORTHOGONALLY MULTIPLEXED PARALLEL DATA TRANSMISSION SYSTEM AND IMPROVED AUTOMATIC EQUALIZER FOR USE IN SUCH A TRANSMISSION SYSTEM

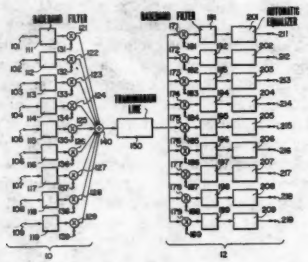
Botaro Hirosaki, and Hidehito Aoyagi, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Aug. 3, 1984, Ser. No. 637,140

Claims priority, application Japan, Aug. 4, 1983, 58-142920; Aug. 26, 1983, 58-156101

Int. Cl.⁴ H04J *11/00, 13/00;* **H03H** *7/30, 7/40*

U.S. Cl. 370—19 **7 Claims**



1. A method of synchronizing parallel channels of an orthogonally multiplexed parallel data transmission system, comprising the steps of:

(a) transmitting a reference data sequence via a reference channel, and transmitting a data sequence obtained by scrambling said reference data sequence via another channel;

(b) receiving said reference data sequence at a first automatic equalizer which is arranged in said reference channel, and receiving the scrambled data sequence at a second automatic equalizer which is arranged in said other channel;

(c) using the received reference data sequence to establish an inital equalization of said first automatic equalizer, and scrambling the received reference data sequence;

(d) using the scrambled reference data sequence obtained in step (c) and the transmitted scrambled data sequence to establish an initial equalization of said second automatic equalizer.

4,621,356

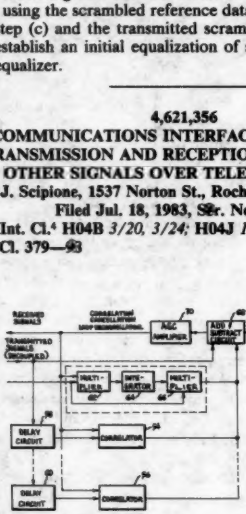
COMMUNICATIONS INTERFACE FOR DUPLEX TRANSMISSION AND RECEPTION OF DATA AND OTHER SIGNALS OVER TELEPHONE LINES

Fred J. Scipione, 1537 Norton St., Rochester, N.Y. 14621

Filed Jul. 18, 1983, Ser. No. 514,426

Int. Cl.⁴ H04B *3/20, 3/24;* **H04J** *15/00;* **H04L** *5/14*

U.S. Cl. 379—93 **19 Claims**



1. A communication system for simultaneous transmission and reception of information representing signals on a communications link which comprises means connected to said link for separating signals received from said link from signals being transmitted on said link to provide received signals containing said transmitted signals, means for decorrelating said received signals with said transmitted signals, including means for correlating said received signals with said transmitting signals to provide a correlation output, and means for directly and without filtering, subtracting said correlation output from said received signals, for deriving output received signals substantially free of interference from said transmitted signals from which said information represented by said received signals can be derived.

4,621,357

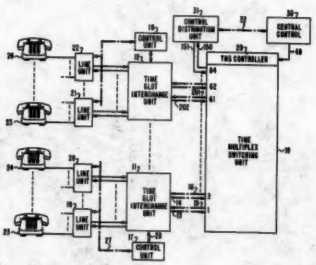
TIME DIVISION SWITCHING SYSTEM CONTROL ARRANGEMENT AND METHOD

Sheldon Naiman, Elmhurst, and Scott W. Pector, Hinsdale, both of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 16, 1984, Ser. No. 641,449

Int. Cl.⁴ H04Q *11/04*

U.S. Cl. 370—58 **13 Claims**



1. In combination

a switch arrangement comprising a plurality of input ports, and a plurality of output ports;

memory means for storing control information defining a pattern of connections between said input and said output ports;

means for reading said control information from memory means and for connecting said input and said output ports in accordance with said defined pattern of connections;

means for generating path setup messages defining a connection between a specified one of said input ports and a specified one of said output ports; and

control means responsive to said path setup messages for writing into said memory means control information defining a pattern of connections in which no output port is connected to said specified input port and then for writing into said memory means control information defining a pattern of connections in which said specified input port is connected to said specified output port.

4,621,358

REMOTE SWITCH FOR TELEPHONY SWITCHING SYSTEM

Haresh Jotwani, Longwood, Fla., assignor to Stromberg-Carlson Corporation, Lake Mary, Fla.

Filed Dec. 10, 1984, Ser. No. 680,005

Int. Cl.⁴ H04Q *11/04*

U.S. Cl. 370—56 **12 Claims**

1. A telephony network comprising a plurality of subscriber lines connected to a line switch which is in turn connected to a central office over a plurality of port group highways,

A. said line switch comprising:

(i) line card means connected to each subscriber line for

converting the voice signals between analog and digital form,

(ii) line group highway means connected to said line card means for transferring digital voice signals to and from said line card means,

(iii) line group highway switch means connected to said line card means and said line group highway means for transferring digital voice signals between said line group highway means and said port group highway means, and

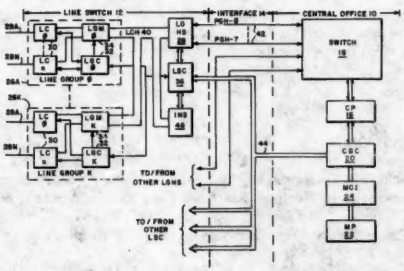
(iv) control means connected to said line card means and said line group highway switch means for establishing paths through said line switch to couple digital voice signals between said line card means and said port group highway means in response to messages from said central office,

B. said central office comprising:

(i) switching means connected to said port group highways for switching digital voice signals among said port group highways, and

(ii) message generating means for generating messages for transmission to said line switch control means to control said line switch control means to provide communications between line switch means to switch telephone calls between calling and called subscriber lines,

C. said line switch further comprising:



(i) intra-nodal switching means connected to said line switch control means and to line group highway means for switching, under control of said line switch control means, digital voice signals between line group highway means to enable calls between subscriber lines connected to the line switch to be switched at the line switch rather than by the central office switching means,

(ii) said line switch control means further comprising:

a. line usage table means containing an entry for each subscriber line indicating whether a call involving that line can be switched through said intra-nodal switching means;

b. means responsive to the receipt of a message from said central office initiating a termination connection through said line switch for determining whether both subscriber lines involved with the call are connected to the line switch and for testing the line usage table means for the subscriber lines to determine whether the lines can be switched through said intra-nodal switching means, and

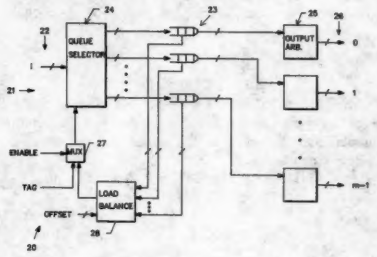
c. means for establishing a path through said intra-nodal switching means if both subscriber lines involved with the call are connected to said line switch and if calls to both subscriber lines can be switched through said intra-nodal switching means.

4,621,359

LOAD BALANCING FOR PACKET SWITCHING NODES

Robert J. McMillen, Long Beach, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Oct. 18, 1984, Ser. No. 661,995
Int. Cl.[4] H04Q *11/04*; H04J *3/24*
U.S. Cl. 370—60 9 Claims



1. A load balancing circuit arrangement for use with a packet switching node that processes applied data packets that contain routing tag signals indicative of the output port destinations to which said data packets are addressed, wherein said load balancing arrangement comprises:

load balancing means coupled to said packet switching node for monitoring the output port addresses of said applied data packets and the number of data packets addressed to each of said output ports, and for generating new routing tag signals identifying output port addresses which are adapted to redistribute the output port load; and

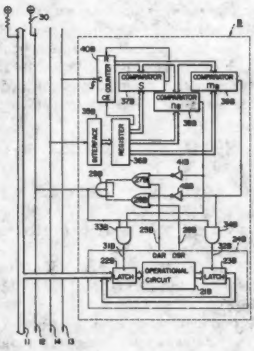
tag selection means coupled to said load balancing means and said packet switching node for selectively replacing the routing tag signals of said applied data packets with said new routing tag signals in order to redistribute and balance the output port load.

4,621,360

CONTROL METHOD OF DATA TRANSFER

Toshifumi Inoue, Kyoto, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Filed Jun. 21, 1984, Ser. No. 622,789
Claims priority, application Japan, Jun. 27, 1983, 58-114184
Int. Cl.[4] H04J *3/00*
U.S. Cl. 370—85 2 Claims



1. A method for controlling transfer of data, which method comprises:

connecting a plurality of operation modules, which share a

one way data bus line, together by means of a one way handshake line;

allocating the timing of use of the data bus line for sending and accepting data among each of the operation modules;

forming a gate circuit, including the handshake line, between two of the operation modules, which can detect coincidence of a data send ready state of one of said two operation modules which is adapted to send data out to the data bus line and a data accept ready state of the other operation module which is adapted to accept the data from the data bus line.

4,621,361

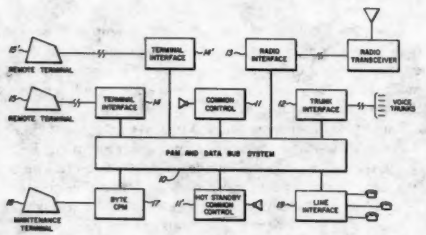
COMMUNICATION SWITCHING SYSTEM

George F. Irwin, Kanata, and Jalal Ebrahimi, Nepean, both of Canada, assignors to Jatel Communications Systems Ltd., Kanata, Canada

Filed Aug. 23, 1983, Ser. No. 525,660

Int. Cl.[4] H04J *3/02*

U.S. Cl. 370—85 **12 Claims**



1. A communication switching system comprising:

(a) a central network bus;

(b) common control means;

(c) a plurality of interface means for interfacing at least one operator position terminal and a plurality of auxiliary circuit terminations to one another and with said common control means;

(d) said central network bus interconnecting said plurality of interface means according to periodically generated address codes;

(e) said plurality of interface means providing time division multiplexed representations of signals originating from associated auxiliary circuit terminations on said central network bus for direct access thereto by other interface means; and

(f) said operator position terminal comprising a microprocessor system adapted to respond to incoming data into the terminal and to commands from a keyboard of the terminal by periodically updating a display on the terminal and by updating connection memories for identifying connections of said auxiliary circuit terminations to other system components.

4,621,362

ROUTING ARCHITECTURE FOR A MULTI-RING LOCAL AREA NETWORK

Kian-Bon K. Sy, Cary, N.C., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Jun. 4, 1984, Ser. No. 616,742

Int. Cl.[4] H04J *3/00*

U.S. Cl. 370—88 **20 Claims**

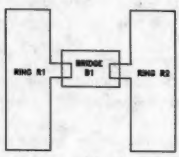
1. In a telecommunication network system wherein a plurality of serial loop networks are being interconnected by a plurality of bridges and each serial loop having one or more utilization stations connected thereto a method for routing frames between stations comprising the steps of:

(a) transmitting from a source station through the loop connected to it, a frame including a first indicia having at least two states and Routing Information (RI) field;

said RI field including one or more routing addresses adaptable for identifying the bridges through which the frame is being routed, a pointer (PTR) field for identifying the order in which the bridges will process the frame and a Length (LTH) field for indicating the length of the RI field;

(b) receiving the frame at a bridge;

(c) determining the position of the bridge relative to the order in which the bridges process the frame;



(d) incrementing the value of the pointer field only if the frame is accessing the bridges in an ascending order;

(e) decrementing the value of the pointer field only if the frame is accessing the bridges in a descending order; and

(f) retransmitting at the next opportunity given to the bridges by the network the frame including the adjusted pointer field whereby the steps recited in (b)–(f) above are being repeated at the bridges whose identify appears in the RI field until the last bridge in said field receives the frame with the pointer being set to a predetermined value, thus indicating that said bridge is at a target ring.

4,621,363

TESTING AND DIAGNOSTIC DEVICE FOR DIGITAL COMPUTERS

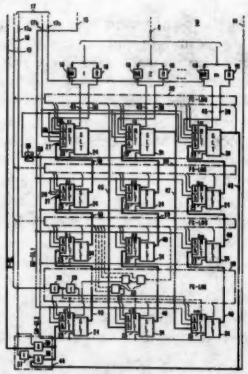
Arnold Blum, Gechingen, Fed. Rep. of Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 6, 1984, Ser. No. 678,750

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1983, 83112339

Int. Cl.[4] G01R *31/28;* **G06F** *11/00*

U.S. Cl. 371—25 **9 Claims**



1. An error testing and diagnostic device for an electronic data processing system having at least one processor, one main storage and one maintenance and service processor interconnected by a fast system bus, the processing system including logic subsystems and storage elements, said device comprising:

(a) connection means for interconnecting the storage ele-

ments (master/slave flip-flops **23**, **24**) of the processing system during the error and diagnostic mode thereof in the form of a garland-shaped shift register chain;

(b) controllable switch means (**44**) for linking the beginning and end of said garland-shaped shift register chain;

(c) clock generating means for producing clock signals (SH-CL1 and SH-CL2) to be used in shifting data into and through said shift register chain; and

(d) interface register means formed by predetermined ones of the storage elements connected between the system bus (**8**) and the processor logic made up of logic subsystems (**20**) for use as both a data receiving and transmitting register, and included in said shift register chain, so that test data from the maintenance and service processor (**6**) is transmitted in parallel on the system bus (**8**) to said interface register means from where it is entered in steps, through said garland-shaped shift register chain, into the logic subsystems, and that upon completion of testing, the resultant data from the logic subsystems is entered into said shift register chain from where it is transferred in steps to said interface register and from there in parallel to the maintenance and service processor (**6**) for error analysis and diagnosis.

4,621,364

CIRCUIT ARRANGEMENT FOR RECORDING THE ADDRESSES OF STORAGE CELLS WITH ERRONEOUS CONTENT

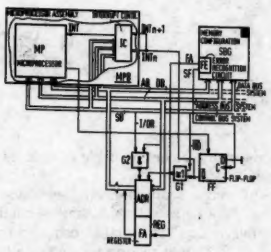
Norbert Tschoepe, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 24, 1984, Ser. No. 644,094

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1983, 3332601

Int. Cl.⁴ G06F *11/10*

U.S. Cl. 371—38 **3 Claims**



1. A circuit arrangement for recording addresses of storage cells, each of which have data contents that are erroneous with respect to encoding, the storage cells being of a memory configuration connected with a central control unit through a bus system, whereby the circuit arrangement for recording addresses comprises:

an error detection circuit which, during an accessing of data of the memory configuration by the central control unit, examines stored data contents read from the storage cells with respect to encoding errors and emits a respective error signal upon a detection of such an encoding error;

first recording cells which can be read by the central control unit and which accept at least part of address information occurring on the bus system while the memory configuration is being accessed by the central control unit;

second recording cells which can be read by the central control unit and which accept information signals which indicate the type of encoding error detected by the error detection circuit;

and a control configuration which, by emitting an input signal at an interrupt input of the central control unit when an error signal is present, causes the control unit to read said first and second recording cells for an evaluation whereby

the first recording cells immediately accept, when the memory configuration is accessed for the purpose of reading the data contents of the storage cells, an entire address information forwarded by the central control unit;

the second recording cells accept said encoding error type information signals when an error signal is present, and said control configuration is connected with a first interrupt input of the central control unit, which is activated during the fault-free state of the circuit arrangement, and with a second interrupt input with a higher interrupt priority than the first interrupt input, which is deactivated during the fault-free state of the circuit arrangement, such that

the control configuration, when an error signal is present, locks out, on one hand, the first recording cells from the reception of additional address information, and on the other hand, starts, through the first interrupt input of the central control unit, a first interrupt routine in the central control unit which serves for determining the presence of dynamic errors and, during the course of the determination, said second interrupt input of the central control unit is activated; and

that upon a renewed access by the central control unit of the storage cells designated by the entire address information stored in said first recording cells, the control configuration effects, in the case of another error signal prior to the completion of the first interrupt routine in progress, by means of the second interrupt input which is now activated, an additional interrupt routine for determining static errors.

4,621,365

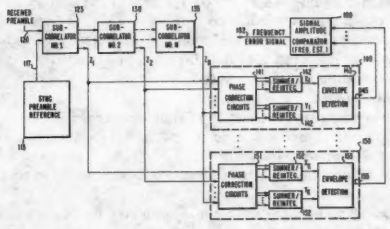
SYNCHRONIZATION PREAMBLE CORRELATION DETECTOR AND FREQUENCY ESTIMATOR

Chen-Shu Chiu, Placentia, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 16, 1984, Ser. No. 672,215

Int. Cl.⁴ H04K *1/00*

U.S. Cl. 375—1 **18 Claims**



1. A synchronization preamble correlation detector for a spread spectrum receiver adapted to operate in the presence of frequency offsets in a received signal from a nominal signal frequency, comprising:

means for providing reference synchronization (sync) preamble signal;

receiver means for providing the received sync preamble signal;

a plurality of subcorrelator circuits responsive to said reference preamble signal and said received preamble signal, each adapted to provide a subcorrelator signal indicative of the extent of matching between respective predetermined portions of said reference signal and said received signal; and

a plurality of frequency sensitive channels each respectively

adapted to match a predetermined frequency offset subband, each channel comprising:

(i) means for providing predetermined phase corrections to said subcorrelator signals in dependence upon the frequency offset subband to which the respective channel is adapted to match so as to provide phase corrected subcorrelator signals; and

(ii) means for combining said phase corrected subcorrelator signals and providing a channel output signal.

4,621,366

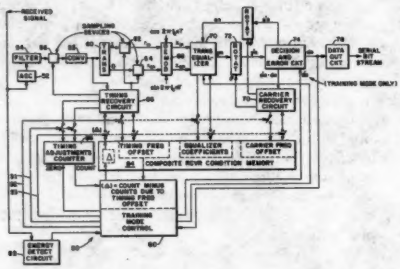
MODEM EQUALIZER TRAINING USING PREVIOUSLY STORED PARAMETERS

Roger W. Cain, and Norman R. Harris, both of Huntsville, Ala., assignors to Universal Data Systems, Inc., Huntsville, Ala.

Filed Feb. 22, 1984, Ser. No. 582,453

Int. Cl.[4] G06F *15/34*; H04B *3/04*

U.S. Cl. 375—8 **11 Claims**



1. A method of equalized modem training between at least two modems comprising the steps of:

receiving a long train sequence of training signals having strong spectral components at the band edges of the transmission spectrum and a subsequent pseudorandom sequence;

acquiring a first set of modem parameters including a timing difference parameter for the difference between the optimum timing of said strong spectral components and said pseudorandom sequence

storing at least one of said modem parameters in a memory;

transferring a block of data between said modems;

terminating the transmissions;

reinitiating the transmissions;

receiving a short sequence of training signals;

acquiring subsequent receiver parameters including a short train timing parameter;

reloading at least one of said stored modem parameters from said memory;

adding said timing difference parameter to said short train timing parameter; and

transferring a subsequent block of data.

4,621,367

SIGNAL LEVEL COMPENSATION IN AN IN-LINE DATA COMMUNICATION SYSTEM

Michiyuki Horiguchi, Nara; Yoshimitsu Matsui, Kashihara, and Masakazu Ohashi, Kyoto, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 26, 1983, Ser. No. 517,275

Claims priority, application Japan, Jul. 31, 1982, 57-133997

Int. Cl.[4] H04B *3/00*

U.S. Cl. 375—36 **1 Claim**

1. An in-line data communication system comprising:

a first terminal station;

a second terminal station;

a bidirectional communication cable for connecting said first terminal station with said second terminal station;

said first and second terminal stations each transmitting data signals on said bidirectional communication cable independently in time; and

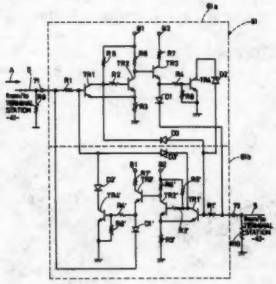
a signal level compensation circuit interposed in said bidirectional communication cable between first and second ends thereof, said signal level compensation circuit including;

a first amplifying circuit for amplifying a data signal transmitted in one direction from said first terminal station, said first amplifying circuit including,

a first transistor having a base connected to the first end of said bidirectional communication cable connected to said first terminal station, said first transistor further having a collector operatively connected to a voltage supply and an emitter operatively connected to ground to bias said first transistor.

a second transistor having a base connected to the collector of said first transistor, a collector operatively connected to the voltage supply and an emitter operatively connected to ground to bias said second transistor,

a third transistor having a base connected to the collector of said second transistor, a collector operatively connected to the voltage supply and an emmitter operatively connected to ground to bias said third transistor, said emitter of said third transistor developing an amplified said data signal and being connected to the second end of said



bidirectional communication cable connected to said second terminal station;

a second amplifying circuit connected with said first amplifying circuit in a parallel fashion, said second amploying circuit amplifying a data signal transmitted in the opposing direction from said second terminal station, said second amplifying circuit including,

a fourth transistor having a base connected to the second end of said bidirectional communication cable connected to said second terminal station, said fourth transistor further having a collector operatively connected to the voltage supply and an emitter operatively connected to ground to bias said fourth transistor,

a fifth transistor having a base connected to the collector of said fourth transistor, a collector operatively connected to the voltage supply and an emitter operatively connected to ground to bias said fifth transistor,

a sixth transistor having a base connected to the collector of said fifth transistor, a collector operatively connected to the voltage supply and an emitter operatively connected to ground to bias said sixth transistor, said emitter of said sixth transistor developing an amplified said data signal and being connected to the first end of said bidirectional communication channel connect to said first terminal station; and

inhibition means for disabling said second amplifying circuit in response to receipt of the data signal transmitted in said one direction, and for disabling said first amplifying cir-

cuit in response to receipt of the data signal transmitted in said opposing direction, said inhibition means including,

first means for disabling operation of said second amplifying circuit before the beginning of transmission of an amplified data signal from said first amplifying circuit to said second terminal station when the data signal is transmitted in said one direction, said first means for disabling including,

a first clamping line interconnecting said collector of said first transitor to said base of said fourth transistor, said first clamping line having a first diode interposed therein, said first diode being arranged to prevent current flow on said first clamping line from said second amplifying circuit to said first amplifying circuit,

second means for disabling operation of said first amplifying circuit before the beginning of transmission of an amplified data signal from said second amplifying circuit to said first terminal station when the data signal is transmitted in said opposing direction, said second means for disabling including,

a second clamping line interconnecting said collector of said fourth transistor to said base of said first transistor, said second clamping line having a second diode interposed therein, said second diode being arranged to prevent current flow on said second clamping line from said first amplifying circuit to said first amplifier circuit,

third means for disabling operation of said second amplifying circuit until after the completion of the transmission of said amplified data signal from said first amplifying circuit when said data is transmitted in said one direction, said third means for diabling including,

a seventh transistor having a base connected to said emitter of said third transistor and an emitter connected to ground, and

a third clamping line interconnecting said collector of said seventh transistor and said base of said fourth transistor, said third clamping line having a third diode interposed therein, said third diode being arranged to prevent current flow on said third clamping line from said second amplifying circuit to said first amplifying circuit,

fourth means for disabling operation of aid first amplifying circuit until after the completion of the transmission of said amplified data from said second amplifying circuit when said data is transmitted in said opposing direction, said fourth means for disabling including,

an eighth transistor having a base connected to said emitter of said sixth transistor and an emitter connected to ground, and

a third clamping line interconnecting said collector of said eighth transistor and said base of said first transistor, said third clamping line having a fourth diode interposed therein, said fourth diode being arranged to prevent current flow on said fourth clamping line from said first amplifying circuit to said second amplifying circuit.

4,621,368

DIGITAL TRANSMISSION SYSTEM

Seizo Onoe, Yokohama, and Takeshi Hattori, Musashino, both of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed Jun. 27, 1984, Ser. No. 625,153
Claims priority, application Japan, Jun. 27, 1983, 58-116671
Int. Cl.[4] H04L *1/08*
U.S. Cl. 375—40 **6 Claims**

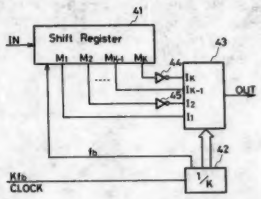
1. A transmitter for use in a signal transmission system, said transmitter comprising:

means for accumulating transmitted information temporarily;

means for inverting the polarity of a code of the transmitted information;

means for transmitting the same information for a plural number of times n at an interval of more than two time slots later and in one polarity and another polarity opposite thereto; and

control means programmed so that the number of transmissions of said one polarity coincides with the number of



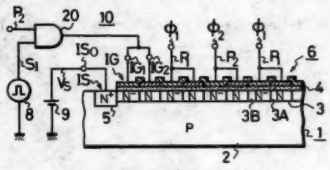
transmissions of said another polarity when said plural number n is an even number while the difference between the number of transmissions of said one polarity and that of said another polarity is one when said plural number n is an odd number.

4,621,369

INPUT CIRCUIT FOR CHARGE TRANSFER DEVICE

Tadakuni Narabu, Atsugi; Takeo Hashimoto, Machida; Hideo Kanbe, Atsugi; Maki Sato, Sagamihara, and Miaki Nakashio, Machida, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 20, 1983, Ser. No. 543,533
Claims priority, application Japan, Jan. 20, 1983, 58-7548
Int. Cl.[4] G11C *19/28*
U.S. Cl. 377—60 **4 Claims**



1. A charge coupled circuit wherein the potential barrier in the input gates is the same as in the transfer gates comprising a substrate of a first conductivity type, a layer of opposite conductivity type formed in the surface of said substrate, a plurality of transfer gates formed over said layer of opposite conductivity type and a plurality of transfer voltages alternately supplied to said transfer gates, a pair of adjacent input gates formed over a portion of said opposite conductivity type and the same variable input signal applied thereto, and an input region of opposite conductivity type formed in said substrate adjacent said pair of adjacent input gates.

4,621,370

BINARY SYNCHRONOUS COUNT AND CLEAR BIT-SLICE MODULE

Kevin Q. On, San Jose, Calif., assignor to GTE Communication Systems Corporation, Phoenix, Ariz.

Filed May 29, 1984, Ser. No. 614,370
Int. Cl.[4] H03K *23/40*
U.S. Cl. 377—106 **4 Claims**

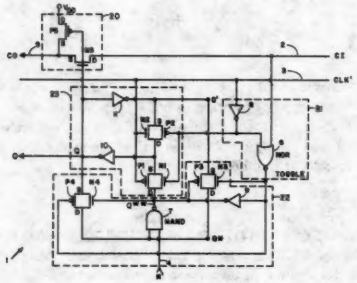
1. A binary synchronous bit-slice counter capable of being cascaded to form a multi-stage counter, said bit-slice counter comprising:

a carry-in signal (CI) input line for receiving a binary CI signal;

a carry-out (CO) signal output line for transmitting a binary CO signal;

a clock signal (CLK') input line for receiving a binary CLK' signal alternating between first and second binary states;
a reset signal (R') input line for receiving a binary R' signal;
a first bistable circuit means having complementary output signals Q and Q', said Q and Q' signals exhibiting first and second stable states and changing from one state to the other every full clock cycle;
first logic circuit means responsive to said Q' and said CI for generating said CO, such that

$$CO=Q'+CI;$$



second logic circuit means responsive to said CI and said CLK' for generating an output signal CLK' and for generating an output signal TOGGLE, such that

$$TOGGLE=\overline{CI}\cdot CLK';$$

second bistable circuit means responsive to said TOGGLE, R', and Q' for generating an output signal Q**, such that

$$Q^{**}=TOGGLE\oplus Q'+\overline{R'};$$

said first bistable circuit means being responsive to said Q** and said CLK' such that $Q=\overline{Q^{**}}$ when CLK' is in said first binary state.

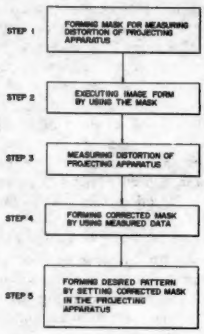
4,621,371

METHOD OF FORMING BY PROJECTION AN INTEGRATED CIRCUIT PATTERN ON A SEMICONDUCTOR WAFER

Mineo Gotou, Kawasaki, and Shunichi Sano, Zama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 29, 1984, Ser. No. 594,731
Claims priority, application Japan, Mar. 29, 1983, 58-52910; Mar. 29, 1983, 58-52911
Int. Cl.[4] H01J *37/304;* **G21K** *5/04*
U.S. Cl. 378—34 **10 Claims**

1. A method of forming by projection an integrated circuit pattern on first semiconductor wafer, comprising the steps of:
irradiating radiant rays onto a mask provided with a plurality of reference marks by the use of a projector apparatus which is used to form the integrated circuit pattern of said first semiconductor wafer so as to project said plurality of reference marks onto a second semiconductor wafer;
measuring the projection distortions peculiar to said projector apparatus by measuring the positions of said reference marks projected onto said second semiconductor wafer;
producing a projection mask for use in the formation of the integrated circuit pattern by using the measured projection distortion, said projection mask being formed by being given an opposite distortion so as to offset the projection distortion peculiar to said projector apparatus, wherein said step of producing the projection mask comprises using an electron beam exposure apparatus to perform the steps of storing in a memory said opposite distortion values (ΔXi, ΔYi) produced in accordance with said projection distortion (Δxi, Δyi), adding said opposite distortion values obtained by measuring the positions of said reference marks stored in said memory to the delineating position data corresponding to a design pattern constituting the integrated circuit pattern so as to obtain corrected delineating position data, and using a deflection signal


STEP 1
FORMING MASK FOR MEASURING DISTORTION OF PROJECTING APPARATUS
STEP 2
EXECUTING IMAGE FORM BY USING THE MASK
STEP 3
MEASURING DISTORTION OF PROJECTING APPARATUS
STEP 4
FORMING CORRECTED MASK BY USING MEASURED DATA
STEP 5
FORMING DESIRED PATTERN BY SETTING CORRECTED MASK IN THE PROJECTING APPARATUS

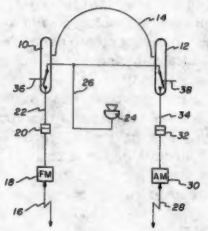
generating circuit to change an amount of deflection of the electron beam in accordance with said corrected exposure position data; and
mounting the projection mask on said projector apparatus and irradiating radiant rays onto said projection mask so as to form the integrated circuit pattern onto the first semoconductor wafer.

4,621,372

DUAL COMMUNICATION HEADSET

Robert G. Relyea, Carrollton, Tex., assignor to RGR Services, Inc., Carrollton, Tex.

Filed Nov. 23, 1984, Ser. No. 674,419
Int. Cl.[4] H04B *1/38*
U.S. Cl. 455—74 **9 Claims**



1. In a communication system having a first transceiver for selectively receiving or transmitting AM communication signals and a second transceiver for selectively receiving or transmitting FM communication signals, the improvement comprising:
a. a headset having first and second earphones,
b. means for connecting said first earphone only to said AM receiver and said second earphone only to said FM receiver whereby only AM communications are received in said first earphone and only FM communications are received in said second earphone,
c. a microphone associated with said headset for generating electrical signals, and
d. means for selectively coupling said microphone to one of said transceivers for transmitting said electrical signals

thereon without disrupting communication signals being received from the other transceiver in said earphone connected thereto whereby communication may be transmitted on either of said transceivers simultaneously with communications being received from said other transceiver.

4,621,373

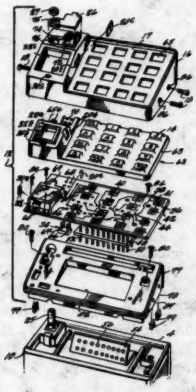
CONTROL SURFACE FOR A TRUNKING PERSONAL RADIO

Roy F. Hodsdon, Lynchburg, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Mar. 13, 1984, Ser. No. 588,997

Int. Cl.[4] H04B *1/38, 1/034, 1/08*

U.S. Cl. 455—89 **3 Claims**



1. In a personal communications device of the type including: (a) a case comprising an elongated box having a top surface, a bottom surface and plural side surfaces, the length of at least one edge of each of said side surfaces exceeding the length of any of the edges of said top and said bottom surfaces, and (b) electronic circuit means, disposed within said case, for establishing communications with a further physically-distinct communications device in accordance with control signals applied thereto, an improvement comprising:

control surface means, disposed on said top surface and electrically coupled to said circuit means, for applying said control signals to said circuit means in response to manipulation thereof by a user, said control surface means including an array of depressable keys; said control surface means including

a printed circuit board mounted to said case and including a plurality of electrical pathway means disposed on at least a first surface of said printed circuit board for carrying a plurality of respective electrical signals;

connector means operatively connected to said printed circuit board for electrically connecting with said plurality of electrical pathway means;

keypad means, disposed on said printed circuit board and at least in part defining said top surface, for causing current to flow through selected ones of said plurality of electrical pathway means,

said keypad means including

a sheet of nonconductive, resilient material encasing said first surface of said printed circuit board, said sheet defining a plurality of resilient, depressible molded hollow protrusions, each of said protrusions defining a corresponding hollow; and

plural electrical contact means, one fixedly disposed within each of said hollows, for electrically connecting predetermined ones of said electrical pathway means together when an associated one of said protusions is depressed;

flexible printed circuit means for electrically connecting said connector means with said electronic circuit means;

said control surface means further including bezel means disposed on said keypad means for protecting said sheet and said printed circuit board, said bezel means having a substantially flat, inclined exterior surface including means defining a plurality of openings in registry with said protrusions, said inclined exterior surface at least in part defining said top surface.

4,621,374

CIRCUIT ARRANGEMENT FOR PROCESSING, TRANSMITTING, AND ACOUSTICALLY REPRODUCING DIGITIZED AUDIO-FREQUENCY SIGNALS

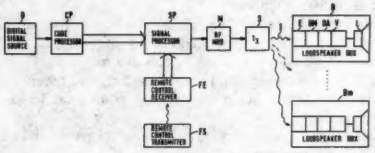
Ljubo Micic, Freiburg, and Edmund Zaehringer, Ehrenkirchen, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Dec. 8, 1982, Ser. No. 447,903

Claims priority, application European Pat. Off., Dec. 24, 1981, 81710059.7

Int. Cl.[4] H04B *9/00*

U.S. Cl. 455—603 **36 Claims**



1. Apparatus for processing digitized audio frequency signals together with digital control signals, said digitized audio frquency signals being coded in a protected code, said apparatus comprising:

a code processor receiving said digitized audio frequency signals, performing error correction and converting said digitized audio frequency signals to a non-redundant code to provide digital output signals at an output;

a signal processor receiving said digital output signals and said digital control signals, said signal processor combining said digital output signals with said digital control signals to provide serial digital output signals;

an RF modulator having an input receiving said serial digital output signals;

an infrared transmitter driven by said RF modulator;

an infrared receiver coupled to said infrared transmitter by a wireless link;

an RF demodulator coupled to the output of said receiver;

a digital to analog converter coupled to the output to said RF demodulator;

a power amplifier coupled to the analog output of said converter; and

a loudspeaker driven by said power amplifier.

4,621,375

REMOTE CONTROL SYSTEM FOR CONSTRUCTIONAL MACHINERY

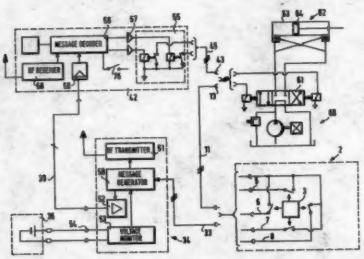
Andrej Simnovec, Recklinghausen, Fed. Rep. of Germany, assignor to Friedrich Wilh. Schwing GmbH, Herne, Fed. Rep. of Germany

Filed Dec. 9, 1983, Ser. No. 559,938

Claims priority, application European Pat. Off., Jan. 8, 1983, 83100108.6

Int. Cl.[4] H04B 9/00

U.S. Cl. 455—603 4 Claims



1. In a remote control system for a construction machine:

a command unit having a number of manually controlled circuits for effecting a number of different control functions;

a multi-pole command unit plug connector, said command unit plug connector being electrically connected to said manually controlled circuits of said command unit, for establishing an electrical connection with said manually controlled circuits;

a transmission unit;

a multi-pole transmission unit plug connector, said transmission unit plug connector being electrically connected to said transmission unit;

a receiver unit having an electrical distributor for generating electrical signals which actuate a plurality of solenoid control valves on a construction machine;

a multi-pole receiver unit plug connector, said receiving unit plug connector being electrically connected to said receiver unit;

a pair of line plug connectors having a line conductor extending therebetween;

whereby said command unit is selectively connected through said plug connectors and said line conductor to one of said transmission unit and said receiver unit to effect wireless and wire remote control of said solenoid valves, respectively;

said transmission unit including means for sending digitally encoded radio frequency messages for each control function which comprise a two-part message continuously transmitted after a connection has been made, such messages each having bits representative of the desired one of said number of control fucntions, address information, and a parity bit for security and mirroring the condition of said circuits of said command unit; and

said receiver unit including means for receiving digitally encoded radio frequency messages, a central process controller connected to said means for receiving for receiving and decoding said messages, a D/A converter/amplifier connected to said process controller for converting the output of said process controller into analogue control signals and a plurality of relays connected to said converter/amplifier and responsive to said control signals for actuating a plurality of solenoid control valves on a construction machine.

4,621,376

DRIVING APPARATUS FOR STABILIZING BURST LIGHT OUTPUT

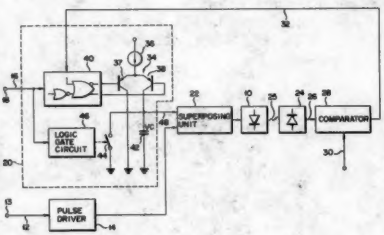
Masaru Nakamura, Kawaguchi, and Osamu Kinoshita, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 25, 1984, Ser. No. 603,893

Claims priority, application Japan, Apr. 28, 1983, 58-73827; Aug. 11, 1983, 58-145689

Int. Cl.[4] H04B 9/00

U.S. Cl. 455—613 14 Claims



1. An apparatus for controlling a bias current supplied to a semiconductor light-emitting element used in an optical communication system to stabilize a light output from said light-emitting element, thereby temperature-compensating changes in the optical output, said apparatus comprising:

(a) photodetector means for detecting light which is emitted from said semiconductor light-emitting element to optically represent a data burst signal for data communication said photodetector means generating a corresponding electrical detection signal while the data burst signal is being transmitted from said light-emitting element; and

(b) bias controller means, connected to said semiconductor light-emitting element and said photodetector means, for compensating said light-emitting element by means of a uni-directional automatic power control in such a manner as to only increase a bias current to be supplied to said light-emitting element in response to the detection signal when an optical output from said light-emitting element is adversely decreased below a required level due to heat radiation from said light-emitting element, said bias controller means comprising,

comparator means connected to said photodetector means, for receiving a reference signal and the detection signal and for comparing the detection signal with the reference signal to generate a comparison signal,

power source means for receiving a constant current, are being charged by the constant current to generate an increasing output current as the bias current, and

logic circuit means connected to said comparator means and said power source means, for controlling the supply of the constant current to said power source means in response to the comparison signal in such a manner that said power source means generates the increasing bias current and, after the optical output temporarily reaches the required level, causes the bias current to hold the last increased current level, which bias current is supplied continuously to said light-emitting element while the data burst signal is being transmitted, said logic circuit means causing said power source means supplying again an increasing bias current to said light-emitting element, when the optical output from said light-emitting element is again adversely decreased below the required level even though said bias current of said last increased current level is being continuously supplied to said light-emitting element.

DESIGN PATENTS

GRANTED NOV. 4, 1986

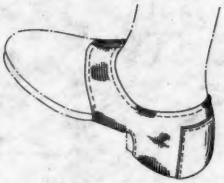
ERRATA

For CLASS	See PATENT NO.
D11–221	286,461
D08–358	286,493
D08–373	286,495
D28–007	286,576

DESIGNS

NOVEMBER 4, 1986

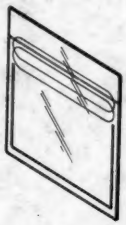
286,460
PROTECTIVE SHOE COVER
Lenore Haber, 18 Wallace Dr., Spring Valley, N.Y. 10097
Division of Ser. No. 527,319, Aug. 29, 1983, Pat. No. Des. 283,751. This application Dec. 31, 1985, Ser. No. 815,386
Term of patent 14 years
U.S. Cl. D2—314



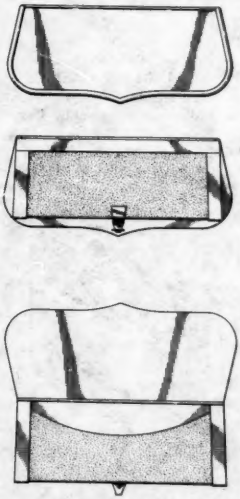
286,461
ZIPPER TOOL
Harry R. Higgins, 12713 Leader St., Houston, Tex. 77072, and Paul N. Pell, 4913 38th St., Dickinson, Tex. 77539
Filed Nov. 28, 1984, Ser. No. 675,551
Term of patent 14 years
U.S. Cl. D11—221

286,462
EYEGLASS CASE
Jean Sender, deceased, late of Forest Hills, N.Y., and by Leo Sender, executor, 102-18 63rd Rd., Forest Hills, N.Y. 11375
Filed Mar. 1, 1984, Ser. No. 585,121
Term of patent 14 years
U.S. Cl. D3—34

286,463
MINI DISK HOLDER
Nicholas Sfikas, 29 Widewaters La., Pittsford, N.Y. 14534
Filed Feb. 13, 1984, Ser. No. 579,874
Term of patent 14 years
U.S. Cl. D3—35



286,464
HINGED PURSE
Ulf S. Tamm, 122 Ch. de la Montagne, 1224 Chene Bougeries, Switzerland
Filed Mar. 28, 1984, Ser. No. 594,216
Term of patent 14 years
U.S. Cl. D3—51



165-329 O.G.-86-13

286,465

KEY HOLDER

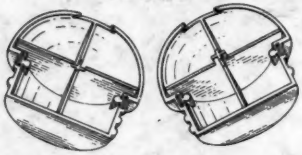
Stephen M. Attwood, Luton, England, assignor to Alternate Resources Limited, Luton, England

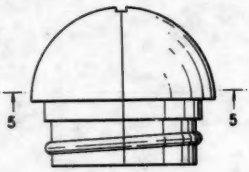
Filed Aug. 3, 1984, Ser. No. 637,563

Claims priority, application United Kingdom, Feb. 3, 1984, 1017675

Term of patent 14 years

U.S. Cl. D3—61





286,466

LUGGAGE CASE

William L. King, Denver, and David E. Workman, Evergreen, both of Colo., assignors to Samsonite Corporation, Denver, Colo.

Filed Sep. 6, 1983, Ser. No. 529,454

Term of patent 14 years

U.S. Cl. D3—77

286,467

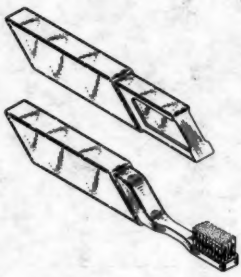
COMBINATION TOOTHBRUSH AND CONTAINER FOR SAME

Robert Berghash, Buffalo, N.Y., assignor to Brimms Inc., Tonawanda, N.Y.

Filed Oct. 15, 1984, Ser. No. 660,794

Term of patent 14 years

U.S. Cl. D4—108



286,468

COMBINED BOTTLE, BRUSH AND HOLDER THEREFOR

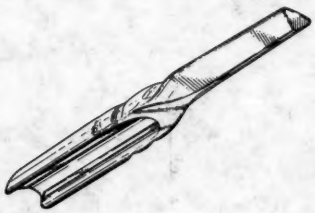
Kathryn J. Fuchs, 2226 Arrowhead Dr., Olathe, Kans. 66062

Filed Apr. 16, 1984, Ser. No. 601,089

Term of patent 14 years

U.S. Cl. D4—114

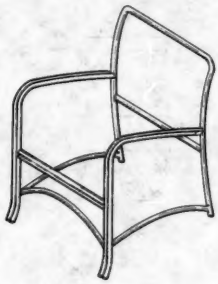
286,469
BRUSH HANDLE
Osvaldo Arciero, Surbiton, England, assignor to Denroy Plastics Limited, Bangor, Northern Ireland
Filed Feb. 22, 1983, Ser. No. 468,542
Claims priority, application United Kingdom, Aug. 20, 1982, 82-1008386
Term of patent 14 years
U.S. Cl. D4—138



286,470
CHILD SAFETY SEAT FOR VEHICLES
Juichiro Takada, 12-1, 3-Chome, Shinmachi, Setagaya-ku, Tokyo, Japan
Filed Apr. 24, 1984, Ser. No. 603,555
Claims priority, application Japan, Oct. 25, 1983, 58-046008
Term of patent 14 years
U.S. Cl. D6—333

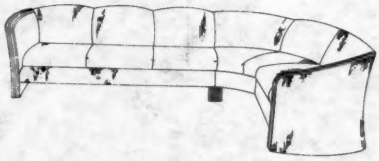
286,471
CHILD'S BOOSTER SEAT
Daniel S. Solloway, 1315 18th St., Woodward, Okla. 73801
Filed Nov. 28, 1983, Ser. No. 555,687
Term of patent 14 years
U.S. Cl. D6—333

286,472
CHAIR FRAME
James R. Arthur, Jr., Birmingham, Ala., assignor to Marathon Corporation, Birmingham, Ala.
Filed May 8, 1984, Ser. No. 608,108
Term of patent 14 years
U.S. Cl. D6—379



286,473
BAR STOOL
Vladimir W. Zakharov, Baldwin Park, Calif., assignor to Mikhail Darafeev, Inc, Baldwin Park, Calif.
Filed Feb. 19, 1985, Ser. No. 702,574
Term of patent 14 years
U.S. Cl. D6—379

286,474
SEAT
Randy R. Culler, High Point, N.C., assignor to Carson's, Inc., High Point, N.C.
Filed Oct. 15, 1985, Ser. No. 787,175
Term of patent 14 years
U.S. Cl. D6—381



286,475

SUPPORT FOR FLOWER POTS

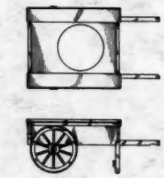
Gerardus F. Mens, Von Bonninghausenlaan 4, 2161 Et Lisse, Netherlands

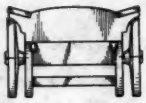
Filed Feb. 7, 1985, Ser. No. 699,252

Claims priority, application Hague, Aug. 20, 1984, DM00410G

Term of patent 14 years

U.S. Cl. D6—404





286,476

FIREPLACE TOOL SUPPORT

John S. Adams, Dubuque, Iowa, assignor to The Adams Company, Dubuque, Iowa

Filed Mar. 7, 1984, Ser. No. 587,145

The portion of the term of this patent subsequent to Nov. 4, 2000, has been disclaimed.

Term of patent 14 years

U.S. Cl. D6—416

286,477

FIREPLACE TOOL SUPPORT

John S. Adams, Dubuque, Iowa, assignor to The Adams Company, Dubuque, Iowa

Filed Mar. 15, 1984, Ser. No. 589,766

The portion of the term of this patent subsequent to Nov. 4, 2000, has been disclaimed.

Term of patent 14 years

U.S. Cl. D6—416

286,478

COMBINED MUSIC AND MICROPHONE SUPPORT STAND

Philip B. Oakes, Jr., 1632 Burroughs St., Oceanside, Calif. 92054

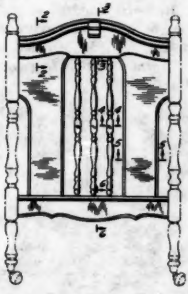
Filed Jun. 27, 1983, Ser. No. 508,324

Term of patent 14 years

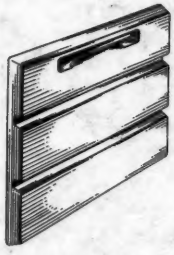
U.S. Cl. D6—419

286,479
FOLDING TABLE
Sisto Marchesini, Vicenza, Italy, assignor to Royal Plastic S.A., Riva San Vital, Switzerland
Filed Nov. 28, 1983, Ser. No. 555,681
Claims priority, application Italy, May 27, 1983, 21977/83[U]
Term of patent 14 years
U.S. Cl. D6—484

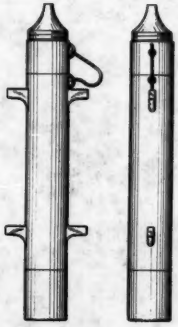
286,480
CRIB FOOTBOARD PANEL
Merlin A. Brunner, New London; Harvey J. Draheim, Weyauwega, both of Wis., and Thomas Hassett, Warren, N.J., assignors to Simmons Universal Corporation, New York, N.Y.
Filed May 14, 1984, Ser. No. 610,205
Term of patent 14 years
U.S. Cl. D6—494



286,481
CABINET DOOR OR SIMILAR ARTICLE
Robert Case, Chicago, Ill.; A. Ronald Holland, Center Point, Pa., and Joe H. Kennedy, Bay Minette, Ala., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.
Division of Ser. No. 514,908, Jul. 18, 1983. This application Oct. 30, 1985, Ser. No. 792,945
Term of patent 14 years
U.S. Cl. D6—510

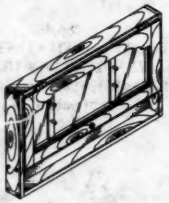


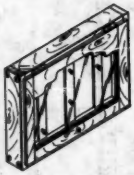
286,482
TOOTHBRUSH CONTAINER
Michael Chavez, 673 E. 137th St. #1B, Bronx, N.Y. 10454
Filed Aug. 1, 1983, Ser. No. 519,304
Term of patent 14 years
U.S. Cl. D6—534



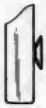
286,483
RACK FOR CORKSCREW
Leonhard Hagedorn, Niederneisen, and Rolf-Günter Schüllein, Singhofen, both of Fed. Rep. of Germany, assignors to Leifheit AG, Nassau, Fed. Rep. of Germany
Division of Ser. No. 664,115, Oct. 25, 1984, which is a division of Ser. No. 251,566, Apr. 6, 1981, Pat. No. Des. 276,018. This application Oct. 4, 1985, Ser. No. 785,059
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1980, GMR 1061
Term of patent 14 years
U.S. Cl. D6—553

286,484
DISPLAY CABINET
Roy A. Honermann, 603 Pennsylvania Ave., Adrian, Minn. 56110
Filed Oct. 12, 1984, Ser. No. 660,321
Term of patent 14 years
U.S. Cl. D6—559

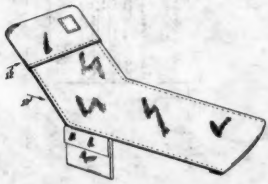




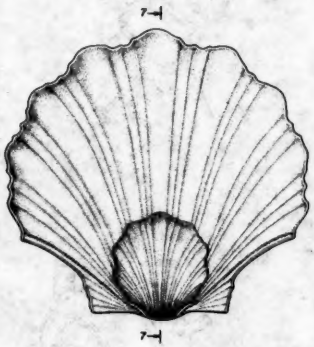
286,485
TELEVISION MAGAZINE HOLDER
Jenneth R. Frizzell, 8062 Robindale, Dearborn Hts., Mich. 48127
Filed May 2, 1984, Ser. No. 606,193
Term of patent 14 years
U.S. Cl. D6—573



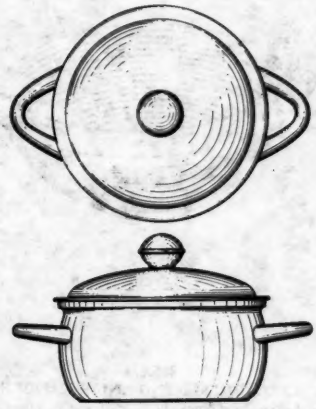
286,486
REMOVABLE LOUNGE CHAIR COVER OR THE LIKE
Samuel M. Goble, Jr., 7416 Wonder La., and Jeffery W. Dorrell, 7417 Wonder La., both of Jacksonville, Fla. 32244
Filed Aug. 24, 1983, Ser. No. 525,963
Term of patent 14 years
U.S. Cl. D6—611



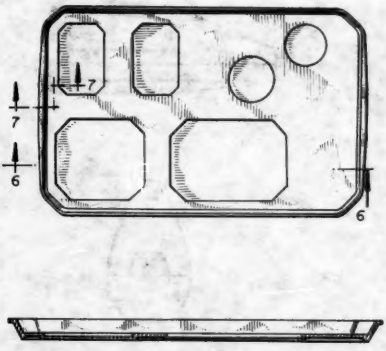
286,487
PLATTER
Larry R. Laslo, New York, N.Y., assignor to American Commercial, Incorporated, Secaucus, N.J.
Filed Jun. 4, 1984, Ser. No. 616,939
Term of patent 14 years
U.S. Cl. D7—5



286,488
TUREEN
Carl J. Broere, Hilversum, Netherlands, assignor to Berk-Becon B.V., Doetinchem, Netherlands
Filed Sep. 7, 1984, Ser. No. 648,807
Claims priority, application Netherlands, Mar. 12, 1984, 58.808-01
Term of patent 14 years
U.S. Cl. D7—17



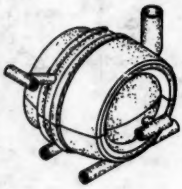
286,489
SERVING TRAY
Joost R. Ritman, Bloemgracht 15-19, 1016 KB Amsterdam, Netherlands
Filed Oct. 3, 1983, Ser. No. 539,377
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1983, MR20,974
Term of patent 14 years
U.S. Cl. D7—21



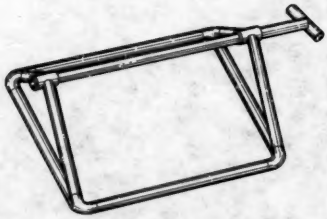
286,490
COLANDER
Arthur R. Carlson, 401A Waverley Rd., East Malvern, Victoria, Australia
Filed Apr. 7, 1983, Ser. No. 482,934
Claims priority, application Australia, Oct. 20, 1982, 1893/82
Term of patent 14 years
U.S. Cl. D7—47

286,491
ELECTRIC SLICING KNIFE HANDLE
Monte L. Levin, New York, N.Y., assignor to Hamilton Beach Inc., Waterbury, Conn.
Filed Jul. 13, 1984, Ser. No. 630,755
Term of patent 14 years
U.S. Cl. D7—139

286,492
COMBINED BARBECUE AND CART THEREFOR
David A. Emring, 275 Montego Dr., St. Peters, Mo. 63376
Filed Mar. 22, 1984, Ser. No. 592,079
Term of patent 14 years
U.S. Cl. D7—334



286,493
WIRE REEL RACK FOR ELECTRICIANS
Arthur G. Floyd, 3720 Corta Calle St., Pasadena, Calif. 91107
Filed Feb. 27, 1984, Ser. No. 583,961
Term of patent 14 years
U.S. Cl. D8—358



286,494

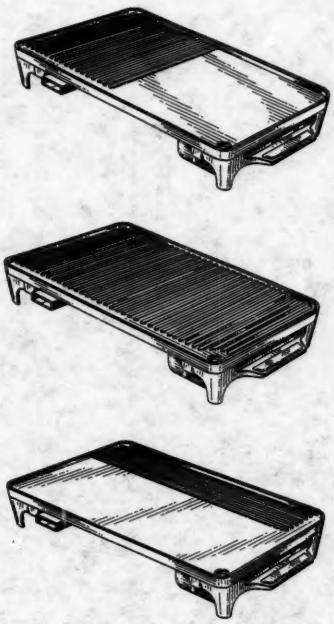
TABLE TOP COOKING GRILL

Leonard V. Lastuck, Mississsauga, Canada, assignor to AMC Appliances, Division of Algonquin Mercantile Corporation, Weston, Canada

Division of Ser. No. 494,107, May 12, 1983. This application Apr. 25, 1985, Ser. No. 726,819

Term of patent 14 years

U.S. Cl. D7—363



286,495

COMBINED WALL MOUNT AND UPRIGHT STANDARD

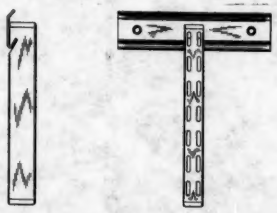
Lars G. C. Blomdahl, Osterskar, Sweden, assignor to Sparring Hyllsystem AB, Stockholm, Sweden

Filed Jun. 10, 1983, Ser. No. 503,313

Claims priority, application Sweden, Dec. 13, 1982, 82-2982

Term of patent 14 years

U.S. Cl. D8—373



286,496

DRAIN TRAY FOR A FOOD STORAGE CONTAINER

Robert H. C. M. Daenen, Hekelgem, and Victor J. J. Cautereels, Borsbeek, both of Belgium, assignors to Dart Industries Inc., Northbrook, Ill.

Filed Jun. 29, 1984, Ser. No. 625,989

Term of patent 14 years

U.S. Cl. D7—388

286,497

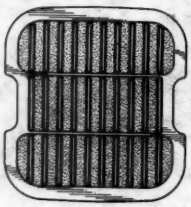
DRAIN TRAY FOR A FOOD STORAGE CONTAINER

Robert H. C. M. Daenen, Hekelgem, and Victor J. J. Cautereels, Borsbeek, both of Belgium, assignors to Dart Industries Inc., Northbrook, Ill.

Filed Jun. 29, 1984, Ser. No. 626,360

Term of patent 14 years

U.S. Cl. D7—388



286,498

COMBINED CHICKEN HOLDER WITH GRAVY CATCHING TRAY

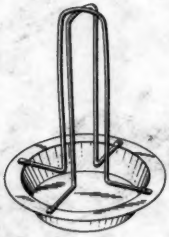
Flemming Rosenkrantz, Mosede Strandvej 6, DK-2670 Greve Strand, Denmark

Filed Jun. 28, 1983, Ser. No. 508,803

Claims priority, application Denmark, Apr. 19, 1983, M.A. 1983/409

Term of patent 14 years

U.S. Cl. D7—409



286,499

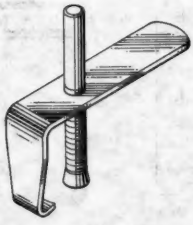
WINDSHIELD WIPER ARM PULLER

Joseph W. Moreno, 3735 Manini Way, Honolulu, Hi. 96816

Filed Feb. 2, 1984, Ser. No. 576,465

Term of patent 14 years

U.S. Cl. D8—89



286,500

HOLE PUNCH WITH EJECTOR FOR PLASTIC TUBING

Michael J. Jaques, and Diane H. Jaques, both of 719 W. Summit Pl., Chandler, Ariz. 85224

Filed Mar. 28, 1983, Ser. No. 479,760

Term of patent 14 years

U.S. Cl. D8—98

286,501

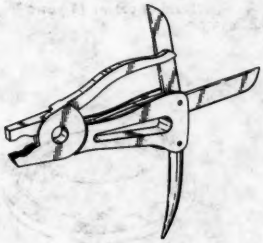
HANDTOOL

Arthur S. C. Magan, 15, Heytesbury Lane, Dublin 4, Ireland

Filed Jan. 27, 1983, Ser. No. 461,466

Term of patent 14 years

U.S. Cl. D8—105



286,502

HANDLE FOR A FIREPLACE TOOL SUPPORT

John S. Adams, Dubuque, Iowa, assignor to The Adams Company, Dubuque, Iowa

Filed Mar. 7, 1984, Ser. No. 587,146

Term of patent 14 years

U.S. Cl. D8—307

286,503

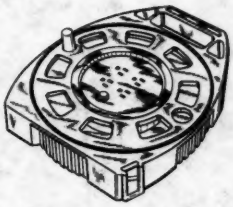
CORD REEL HOUSING

Bert Bobrovniczky, Don Mills, Canada, assignor to Noma Inc., Scarborough, Canada

Filed Feb. 21, 1984, Ser. No. 581,874

Term of patent 14 years

U.S. Cl. D8—359



286,504

DISPENSING CONTAINER

Ernest W. Loesser, 58 Sunset Ter., Cedar Grove, N.J. 07009, and Richard Hussey, 356 Chebacco Rd., South Hamilton, Mass. 01982

Filed Mar. 16, 1984, Ser. No. 590,446

Term of patent 14 years

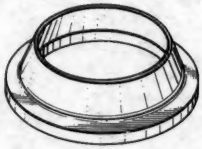
U.S. Cl. D9—302

286,505
CONTAINER FOR KNITTING NEEDLES
Hidekazu Okada, Ashiya, Japan, assignor to Clover Mfg. Co., Ltd., Osaka, Japan
Filed Oct. 25, 1983, Ser. No. 545,185
Term of patent 14 years
U.S. Cl. D9—307

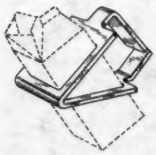
286,506
DISPENSING CONTAINER FOR FACIAL TISSUES OR THE LIKE
Albert C. G. Poore, New Malden, and Bernard Sams, London, both of England, assignors to Sterling Drug Inc., New York, N.Y.
Filed Mar. 2, 1984, Ser. No. 585,591
Claims priority, application United Kingdom, Sep. 9, 1983, 1015044
Term of patent 14 years
U.S. Cl. D9—390

286,507
DISPOSABLE CUP HOLDER
Joseph R. Drago, 8533 Capistrano, Canoga Park, Calif. 91304
Filed Jun. 21, 1984, Ser. No. 623,242
Term of patent 14 years
U.S. Cl. D9—415

286,508
POURING COVER FOR PAINT CANS
David J. Tilden, 5412 Ygnacio Dr., Sacramento, Calif. 95842
Filed Aug. 29, 1983, Ser. No. 527,351
Term of patent 14 years
U.S. Cl. D9—435



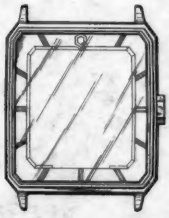
286,509
CONTAINER HOLDER
Michael R. Havis, 2150 Pacific Beach Dr., San Diego, Calif. 92109
Filed Feb. 10, 1984, Ser. No. 579,037
Term of patent 14 years
U.S. Cl. D9—455



286,510
CHRONOGRAPH
Eddy Schoepfer, La Chaux-du-Milieu, Switzerland, assignor to Fabrique Ebel, Societe Anonyme, Switzerland
Filed Aug. 8, 1983, Ser. No. 521,418
Claims priority, application Hague, Feb. 11, 1983, DM/002241
Term of patent 14 years
U.S. Cl. D10—32

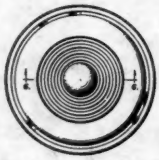
286,511
TOY ROBOT WATCH
Takashi Wada, Abiko, Japan, assignor to Takara Co., Ltd., Tokyo, Japan
Filed Oct. 1, 1984, Ser. No. 656,663
Claims priority, application Japan, May 30, 1984, 59-22204
Term of patent 14 years
U.S. Cl. D10—35

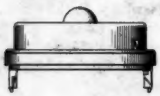
286,512
WRISTWATCH
Shinpei Ichikawa, Newbury Park, Calif., assignor to Timex Corporation, Waterbury, Conn.
Filed Nov. 28, 1984, Ser. No. 675,905
Term of patent 14 years
U.S. Cl. D10—38



286,513
CONTAINER FOR AN ALARM SENSOR
Sik-Kee Au, San Jose, Calif., assignor to Au Electric Corporation, San Jose, Calif.
Filed Jul. 6, 1983, Ser. No. 511,864
Claims priority, application United Kingdom, Jan. 14, 1983, 1010796
Term of patent 14 years
U.S. Cl. D10—106

286,514
THERMAL DETECTOR
Kim J. Spang, Aurora, Ill., assignor to Pittway Corporation, Aurora, Ill.
Filed Sep. 26, 1983, Ser. No. 535,592
Term of patent 14 years
U.S. Cl. D10—106





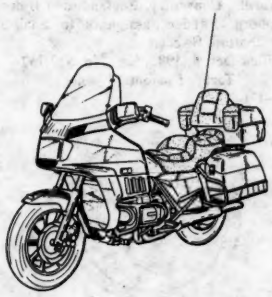
286,515
WATCH STRAP
Fu Hong Lai, Kowloon, Hong Kong, assignor to Hong Nin Metal Works Factory Co. Ltd., Kwai Chung, Hong Kong
Filed May 10, 1984, Ser. No. 609,105
Claims priority, application United Kingdom, Nov. 22, 1983, 1016412
Term of patent 14 years
U.S. Cl. D11—3

286,516
WRISTWATCH BRACELET
Jean-Pierre Chodat, Auvernier, Switzerland, assignor to Fabrique Ebel, Societe Anonyme, Switzerland
Continuation-in-part of Ser. No. 566,720, Dec. 29, 1983, Pat. No. D. 283,681. This application Jul. 23, 1984, Ser. No. 633,535
Claims priority, application Hague, Jun. 29, 1983, DM/002642
Term of patent 14 years
U.S. Cl. D11—3

286,517
NECKLACE
Marina Bulgari, Athens, Greece, assignor to Marina B.Creation, S.A., Vaduz, Liechtenstein
Filed Oct. 9, 1984, Ser. No. 658,758
Claims priority, application Italy, Apr. 9, 1984, 35705B/84[U]
Term of patent 14 years
U.S. Cl. D11—6

286,518
TROPHY BASE
Freddy T. Lee, 467 SE. Whitmore Dr., Port St. Lucie, Fla. 33452
Filed May 4, 1984, Ser. No. 607,318
Term of patent 14 years
U.S. Cl. D11—164

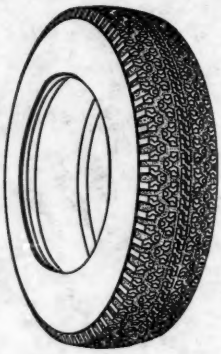
286,519
MOTORCYCLE
Katsusuke Komuro, Tokyo; Toshiyuki Yamada, and Mutsuo Hirose, both of Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 30, 1983, Ser. No. 556,587
Claims priority, application Japan, Jun. 3, 1983, 23889/1983
Term of patent 14 years
U.S. Cl. D12—110



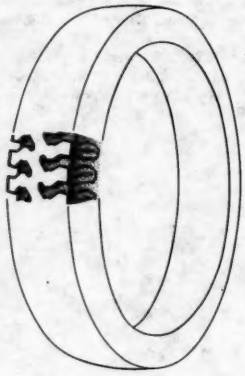
286,520
MOTORCYCLE
Shoichi Kuwahata, Saitama, and Norio Tanaka, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 23, 1984, Ser. No. 633,392
Term of patent 14 years
U.S. Cl. D12—110

286,521
MOTORCYCLE
Masatoshi Tanaka, Tokyo, and Shoichi Kuwahata, Saitama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 28, 1984, Ser. No. 655,908
Claims priority, application Japan, Apr. 18, 1984, 59-15631
Term of patent 14 years
U.S. Cl. D12—110

286,522
VEHICLE TIRE
Kenji Hatakenaka, Kobe, Japan, assignor to Sumitomo Rubber Ltd., Kobe, Japan
Filed Dec. 16, 1983, Ser. No. 562,261
Claims priority, application Japan, Jun. 16, 1983, 58-26124
Term of patent 14 years
U.S. Cl. D12—146

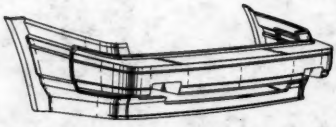


286,523
PNEUMATIC TIRE TREAD AND BUTTRESS
Gerasimos Candiliotis, Grosse Pointe Farms, Mich., assignor to Uniroyal Tire Company, Inc., Middlebury, Conn.
Filed Dec. 13, 1983, Ser. No. 561,023
Term of patent 14 years
U.S. Cl. D12—146



286,524
ANTI SKID CHAIN UNIT FOR VEHICLE TIRES
Ragnar Härdmark, Linköping, Sweden, assignor to Onspot AB, Sweden
Filed Jul. 13, 1984, Ser. No. 630,412
Claims priority, application Sweden, Jan. 17, 1984, 840132
Term of patent 14 years
U.S. Cl. D12—154

286,525
FRONT BUMPER
Ryoichi Sasaoka, Yokohama, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed May 3, 1984, Ser. No. 606,681
Term of patent 14 years
U.S. Cl. D12—169



286,526
AUTOMOBILE STEERING WHEEL
Geoffrey P. Wardle, Conventry, England, and Björn E. A. Envall, Vanersborg, Sweden, assignors to Saab-Scania Aktiebolag, Trollhattan, Sweden
Filed Oct. 6, 1983, Ser. No. 539,757
Term of patent 14 years
U.S. Cl. D12—176

286,527

COMBINED REAR WINDOW AND TRUNK LID FOR AN AUTOMOBILE

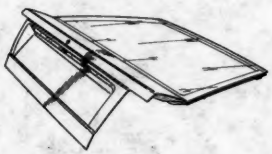
Björn E. A. Envall, Vänersborg, Sweden, and Giorgetto Giugiaro, Turin, Italy, assignors to Saab-Scania Aktiebolag, Trollhattan, Sweden

Filed Apr. 24, 1984, Ser. No. 603,944

Claims priority, application Sweden, Oct. 26, 1983, 832778

Term of patent 14 years

U.S. Cl. D12—183



286,528

ROWBOAT

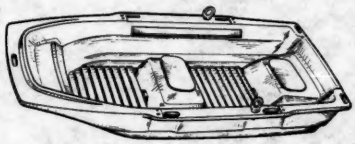
Yoshinori Morimoto, Fuchu; Naoshige Hukuhara, and Takaaki Tachibana, both of Okayama, all of Japan, assignors to Ryobi Limited and Minoru Kasei Co., Ltd., both of Nishinomiya, Japan

Filed Nov. 23, 1984, Ser. No. 674,081

Claims priority, application Japan, Jun. 27, 1984, 59-26656

Term of patent 14 years

U.S. Cl. D12—300



286,529

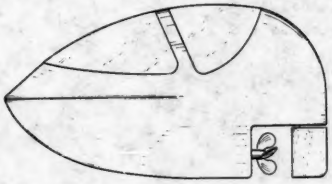
WATERCRAFT OR SIMILAR ARTICLE

John G. Hoyt, 49 America's Cup Ave., Newport, R.I. 02840

Filed Aug. 31, 1984, Ser. No. 646,226

Term of patent 14 years

U.S. Cl. D12—305



286,530

TELEPHONE SET

Yoshio Sasaki; Toshio Nishimura, and Kei Matsuda, all of Kawasaki, Japan, assignors to Nitsuko Limited, Kanagawa, Japan

Filed Oct. 15, 1984, Ser. No. 660,927

Claims priority, application Japan, Jun. 29, 1984, 59-26566

Term of patent 14 years

U.S. Cl. D14—53

286,531

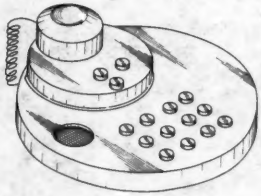
TELEPHONE SET

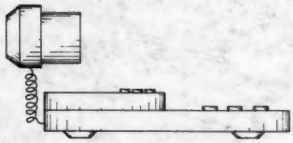
Peter Lee, 2 Fl., 7 Lane 93, Paoping Rd., Chungho City, Taipei Hsien, China

Filed May 31, 1984, Ser. No. 616,263

Term of patent 14 years

U.S. Cl. D14—53





286,532

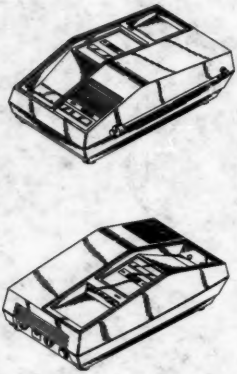
CORDLESS TELEPHONE BASE

Stephen A. Nichols, Indianapolis, Ind., assignor to Uniden Corporation of America, Indianapolis, Ind.

Filed Mar. 9, 1983, Ser. No. 473,652

Term of patent 14 years

U.S. Cl. D14—60



286,533

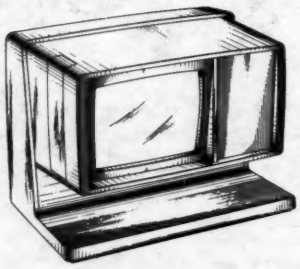
COMMUNICATION TERMINAL HOUSING

Cristian J. Felix, Flushing, N.Y.; Thomas J. Kelly, Colts Neck; Richard F. Nelson, Jr., Fair Haven, both of N.J.; Gordon E. Sylvester, Jamaica, N.Y., and Daniel W. Tyler, Middletown, N.J., assignors to AT&T Information Systems Inc., Middletown, N.J.

Filed Nov. 23, 1983, Ser. No. 554,541

Term of patent 14 years

U.S. Cl. D14—106



286,534

DISPLAY PRINTER

Charles J. Holloman, Norwalk, Conn., and Elinor B. Bunin, New York, N.Y., assignors to Trans-Lux Corporation, Norwalk, Conn.

Filed Aug. 16, 1983, Ser. No. 523,745

Term of patent 14 years

U.S. Cl. D14—111

286,535

SEWING MACHINE

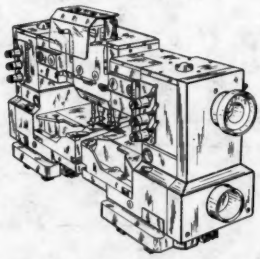
Pietro Draghicchio, Milan, Italy, assignor to Rockwell-Rimoldi S.p.A., Italy

Filed Dec. 12, 1983, Ser. No. 560,678

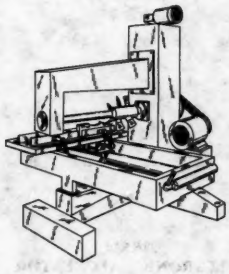
Claims priority, application Italy, Jun. 10, 1983, 22088/83[U]

Term of patent 14 years

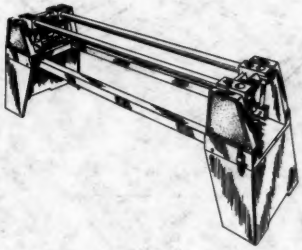
U.S. Cl. D15—69



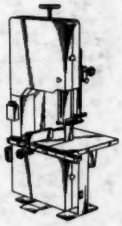
286,536
PROFILE PLANER
Marion L. Beck; Lonnie R. Beane, and Billy Norris, all of P.O. Box 776, Jamestown, N.C. 27282
Filed Aug. 29, 1984, Ser. No. 645,282
Term of patent 14 years
U.S. Cl. D15—127



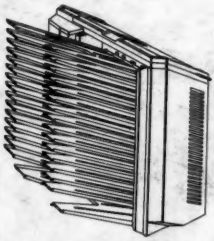
286,538
SUPPORT FRAME FOR A POWER TOOL
Michael J. Duwell, Cincinnati, and Charles J. Haas, Middletown, both of Ohio, assignors to Shopsmith, Inc., Dayton, Ohio
Filed Nov. 16, 1983, Ser. No. 552,580
Term of patent 14 years
U.S. Cl. D15—141



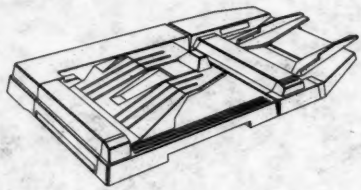
286,537
ELECTRIC BAND SAW
Masayoshi Yamamoto, Hiroshima, Japan, assignor to Ryobi Ltd., Hiroshima, Japan
Filed Jul. 9, 1984, Ser. No. 629,294
Claims priority, application Japan, Feb. 21, 1984, 59-6465
Term of patent 14 years
U.S. Cl. D15—134



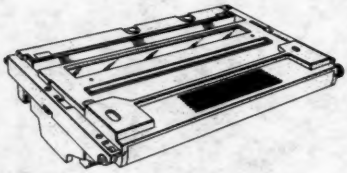
286,539
SORTER FOR ELECTROPHOTOGRAPHIC COPYING MACHINE
Masanori Hashimoto, Kanagawa, Japan, assignor to Ricoh Company, Ltd., Japan
Filed Jul. 17, 1984, Ser. No. 631,588
Claims priority, application Japan, Feb. 23, 1984, 59-006625
Term of patent 14 years
U.S. Cl. D16—32



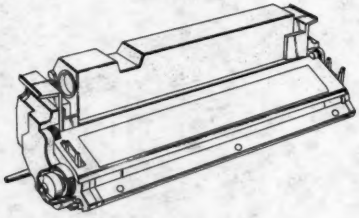
286,540
DOCUMENT FEEDER FOR ELECTROPHOTOGRAPHIC COPYING MACHINE
Masanori Hashimoto, Kanagawa, Japan, assignor to Ricoh Company, Ltd., Japan
Filed Jul. 17, 1984, Ser. No. 631,589
Claims priority, application Japan, Feb. 23, 1984, 59-006626
Term of patent 14 years
U.S. Cl. D16—32



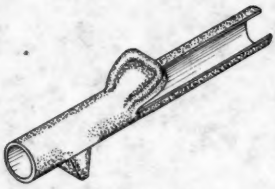
286,541
PHOTOCONDUCTOR UNIT FOR COPYING MACHINE
Sadao Takahashi, Tokyo, and Minoru Suzuki, Kanagawa, both of Japan, assignors to Ricoh Company, Ltd., Japan
Filed Sep. 7, 1984, Ser. No. 648,712
Claims priority, application Japan, Mar. 7, 1984, 59-008642
Term of patent 14 years
U.S. Cl. D16—32



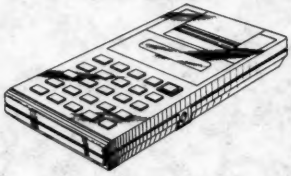
286,542
DEVELOPING UNIT FOR COPYING MACHINE
Takeshi Saito, Chiba, Japan, assignor to Ricoh Company, Ltd., Japan
Filed Sep. 7, 1984, Ser. No. 648,713
Claims priority, application Japan, Mar. 7, 1984, 59-008647
Term of patent 14 years
U.S. Cl. D16—32



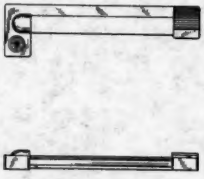
286,543
CELLO AND STRING BASS BOW GRIP
Vincent Jablonski, 231 W. Miami Ave., Venice, Fla. 33595
Filed Feb. 21, 1984, Ser. No. 581,721
Term of patent 14 years
U.S. Cl. D17—20



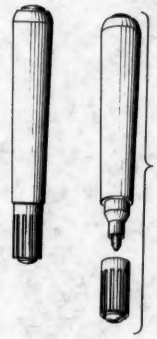
286,544
ELECTRONIC CALCULATOR
Noriko Satake, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Sep. 25, 1984, Ser. No. 654,757
Claims priority, application Japan, Mar. 29, 1984, 59-12854
Term of patent 14 years
U.S. Cl. D18—7



286,545
INK RIBBON CARTRIDGE
Chikao Tezuka, Shiojiri, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan
Filed Jun. 18, 1984, Ser. No. 621,634
Claims priority, application Japan, Dec. 20, 1983, 58-54990
Term of patent 14 years
U.S. Cl. D18—22

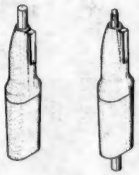


286,546
FELT TIP PEN
Tatsuro Funahashi, Komaki, Japan, assignor to Shachihata Industrial Co., Ltd., Japan
Filed Jul. 6, 1984, Ser. No. 628,615
Claims priority, application Japan, Jan. 14, 1984, 59-994
Term of patent 14 years
U.S. Cl. D19—43



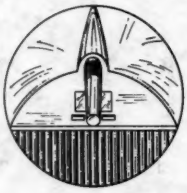
286,547
PEN
Masashi Koizumi, and Takao Inaba, both of Aichi, Japan, assignors to The Pilot Ink Co., Ltd., Aichi, Japan
Filed Nov. 13, 1984, Ser. No. 671,136
Term of patent 14 years
U.S. Cl. D19—51

286,548
POCKET ELECTRIC ERASER
James C. Hsieh, 4Fl., No. 2, Alley 21, Lane 47, Cheng-Kung Rd., Sec. 1, Yung Ho City, China
Filed Apr. 3, 1984, Ser. No. 596,338
Term of patent 14 years
U.S. Cl. D19—53

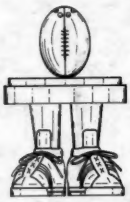


286,549
MECHANICAL WRITING DEVICE
Ronald R. Erlendson, 1418 Willow, Alameda, Calif. 94501
Filed Oct. 26, 1984, Ser. No. 665,308
Term of patent 14 years
U.S. Cl. D19—55

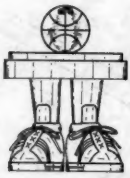
286,550
COMBINED DESK PEN SET, LCD-CLOCK AND PAPERCLIP CONTAINER
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kwung Tongi, Hong Kong
Filed Oct. 5, 1983, Ser. No. 539,310
Claims priority, application United Kingdom, Apr. 13, 1983, 1012471
Term of patent 14 years
U.S. Cl. D19—75



286,551
PENCIL HOLDER
Roy E. Satterfield, 309 Oak Park Dr., Knoxville, Tenn. 37918
Filed Sep. 26, 1983, Ser. No. 535,940
The portion of the term of this patent subsequent to Nov. 4, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D19—82



286,552
PENCIL HOLDER
Roy E. Satterfield, 309 Oak Park Dr., Knoxville, Tenn. 37918
Filed Sep. 27, 1983, Ser. No. 536,179
The portion of the term of this patent subsequent to Nov. 4, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D19—82



286,553
PEN STAND
Lu Chih-Tien, Fl. 3-1, 17, 4th Sec., Nanking E. Road, Taipei, Taiwan
Filed Apr. 30, 1984, Ser. No. 605,555
Term of patent 14 years
U.S. Cl. D19—82

286,554
DECAL OR THE LIKE
Antoine Giraco, 10846 Hesby St., N. Hollywood, Calif. 91601
Filed Mar. 30, 1981, Ser. No. 249,605
Term of patent 14 years
U.S. Cl. D20—11

286,555
CARD CLIP
Dennis K. Metzger, 9922 Davis Rd., and William J. Lund, 1418 Woodcreek Way, both of Stockton, Calif. 95209
Filed Dec. 21, 1983, Ser. No. 564,115
Term of patent 14 years
U.S. Cl. D20—43

286,556
TOY RATTLE
David M. Williams, New York, N.Y., and Danny E. Simpson, Baltimore, Md., assignors to Johnson & Johnson Baby Products Company, New Brunswick, N.J.
Filed Jul. 16, 1984, Ser. No. 631,273
Term of patent 14 years
U.S. Cl. D21—65

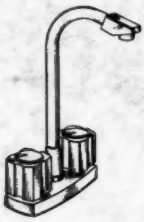
286,557
Patent Not Issued For This Number

286,558
TOY GUN
Francis M. L. Barthropp, 4371 Marine Dr., West Vancouver, British Columbia, Canada V7V 1P3
Filed Aug. 15, 1984, Ser. No. 641,006
Term of patent 14 years
U.S. Cl. D21—147

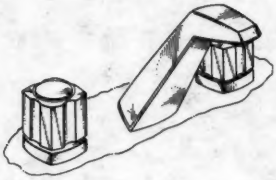
286,559
TOY GUN
Francis M. L. Barthropp, 4371 Marine Dr., West Vancouver, British Columbia, Canada V7V 1P3
Filed Aug. 17, 1984, Ser. No. 641,704
Term of patent 14 years
U.S. Cl. D21—147

286,560
FLOAT FOR SWIMMING POOL CHLORINE DISPENSER
Henry S. Wolfe, St. Petersburg, Fla., assignor to Gulf Coast Aqua Leisure, Inc., Clearwater, Fla.
Filed Apr. 6, 1984, Ser. No. 597,259
Term of patent 14 years
U.S. Cl. D23—3

286,561
BAR SINK FAUCET
Holly K. Yost, Van Nuys, Calif., assignor to Price Pfister, Inc., Pacoima, Calif.
Division of Ser. No. 507,524, Jun. 24, 1983. This application Jul. 22, 1985, Ser. No. 757,729
Term of patent 14 years
U.S. Cl. D23—25

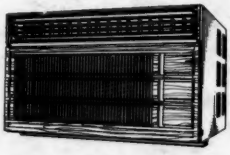


286,562
LAVATORY FAUCET SET
Holly K. Yost, Van Nuys, Calif., assignor to Price Pfister, Inc., Paxoima, Calif.
Division of Ser. No. 507,524, Jun. 24, 1983. This application Jul. 22, 1985, Ser. No. 757,730
Term of patent 14 years
U.S. Cl. D23—25

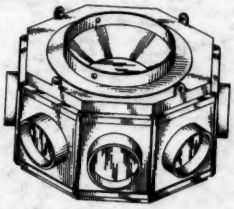


286,563
BACK DRAFT SHUTTER
Minel Kupferberg, 5862 Ferncroft Rd., Montreal, Quebec, Canada H3X 1C7
Filed Jul. 1, 1983, Ser. No. 510,315
Term of patent 14 years
U.S. Cl. D23—112

286,564
ROOM AIR CONDITIONER
Hitoshi Sugino, Shiga, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Mar. 14, 1983, Ser. No. 474,943
Claims priority, application Japan, Sep. 14, 1982, 57-41878
Term of patent 14 years
U.S. Cl. D23—141



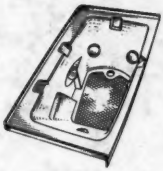
286,565
INDOOR FAN COIL CABINET
Alan S. Drucker, Dewitt, and King H. Kwok, Liverpool, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Jun. 8, 1984, Ser. No. 618,655
Term of patent 14 years
U.S. Cl. D23—155



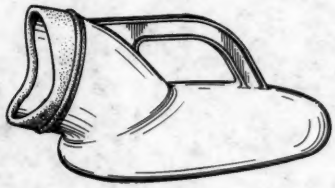
286,566
DIAGNOSTIC ARTHROSCOPE
Marko Vukovic, 152 W. Burton Pl., Chicago, Ill. 60610
Filed Jan. 23, 1984, Ser. No. 573,294
Term of patent 14 years
U.S. Cl. D24—17

286,567
SURGICAL TROCAR
Philip R. Lichtman, Newton, and John C. Strahan, Arlington, both of Mass., assignors to Acufex Microsurgical Inc., Norwood, Mass.
Filed May 16, 1983, Ser. No. 494,889
The portion of the term of this patent subsequent to Oct. 28, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—28

286,568
WHIRLPOOL BATHING SHELL
Robert C. Kingsley, Northridge, Calif., assignor to Hydro-Spa Inc., Piru, Calif.
Filed Oct. 23, 1984, Ser. No. 663,770
Term of patent 14 years
U.S. Cl. D24—38



286,569
URINAL FOR FEMALE PATIENT
Shinroku Nakao, Kanagawa; Yoshiyasu Ishii, and Kenshun Ishii, both of Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Nov. 16, 1984, Ser. No. 672,435
Claims priority, application Japan, May 29, 1984, 59-21896
Term of patent 14 years
U.S. Cl. D24—54



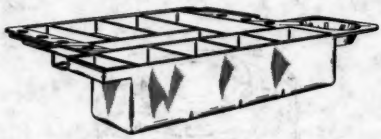
286,570
PIPETTE TIP
Fred G. Williams, San Anselmo, Calif., assignor to Cetus Corporation, Emeryville, Calif.
Filed Oct. 26, 1983, Ser. No. 545,757
Term of patent 14 years
U.S. Cl. D24—55

286,571
DISPENSING CAP FOR AN EYEDROP BOTTLE
Susan M. Jakub, 23 Friend St., Hingham, Mass. 02043
Filed Mar. 21, 1984, Ser. No. 591,947
Term of patent 14 years
U.S. Cl. D24—63

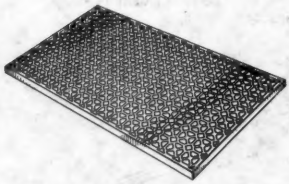
286,572
ORTHOPEDIC LEG BRACE
Slim Saare, Sundbyberg, Sweden, assignor to Rehband Anatomiska AB, Stockholm, Sweden
Filed Aug. 24, 1983, Ser. No. 526,384
Term of patent 14 years
U.S. Cl. D24—64

286,573
FOLDABLE TRESTLE
Bjorn Kilenstam, Ljungskile, Sweden, assignor to AB Profilproduktor, Ljungskile, Sweden
Filed Mar. 21, 1984, Ser. No. 591,861
Term of patent 14 years
U.S. Cl. D25—67

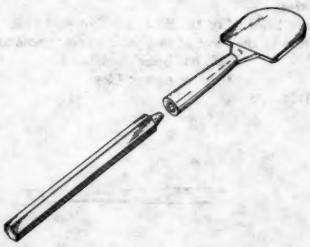
286,574
LADDER SAFETY TRAY
Carl M. McMillin, 1509 Mapleton Dr., Dallas, Tex. 75228
Filed Mar. 12, 1984, Ser. No. 588,792
Term of patent 14 years
U.S. Cl. D25—68



286,575
DECORATIVE PANEL
Jolyon D. Saunders, Auckland, New Zealand, assignor to Kent Heating Limited, Mangere, New Zealand
Filed Dec. 28, 1983, Ser. No. 566,335
Claims priority, application New Zealand, Jul. 21, 1983, 18491
Term of patent 14 years
U.S. Cl. D25—88



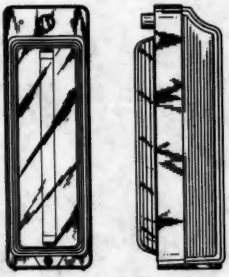
286,576
COSMETIC APPLICATOR
John B. Schneider, and Carol A. Schneider, both of 22 Valley View Dr., Hyde Park, N.Y. 12538
Filed May 23, 1984, Ser. No. 613,179
Term of patent 14 years
U.S. Cl. D28—7



286,577
RECHARGEABLE FLUORESCENT LANTERN WITH RETRACTABLE HANDLE

John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong

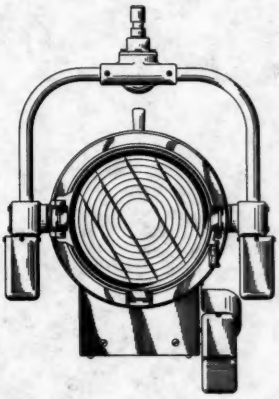
Filed Jul. 12, 1984, Ser. No. 630,367
Claims priority, application United Kingdom, Feb. 7, 1984, 1 017 753
Term of patent 14 years
U.S. Cl. D26—42



286,578
SPOTLIGHT

William G. Krekaugger, Chatsworth, Calif., assignor to Mole-Richardson Co., Hollywood, Calif.

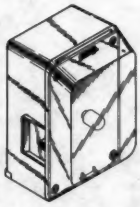
Filed Feb. 13, 1984, Ser. No. 579,499
Term of patent 14 years
U.S. Cl. D26—63



286,579
LIGHT FOR CLOSETS, STORAGE SPACES, AND THE LIKE

Timothy G. Pugh, Arnold; Thornton H. Gogoll, Easton; Don R. McCloskey, Trappe, and Vernon R. Lacher, Queenstown, all of Md., assignors to Black & Decker, Inc., Newark, Del.

Filed Feb. 21, 1984, Ser. No. 581,592
Term of patent 14 years
U.S. Cl. D26—85



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 4TH DAY OF NOVEMBER, 1986

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. J. Wormgoor B.V.: *See*—
Wormgoor, Arend J., 4,620,504, Cl. 119-35.000.

A.K.G.S. Partnership: *See*—
Diamond, Fredric L.; and Andrews, Kenneth E., 4,620,479, Cl. 100-215.000.

A. Klebes GmbH & Co. KG Kunstsoff- und Metallwarenfabrik: *See*—
Luttgens, Werner, 4,620,558, Cl. 132-79.000.

A. Lassonde & Fils Inc.: *See*—
Dumont, Yves, 4,620,980, Cl. 426-330.500.

A/S Niro Atomizer: *See*—
Hansen, Ove E., 4,621,068, Cl. 502-8.000.

Abbey, Kirk J.: *See*—
Lin, Ju-Chui; Carlson, Gary M.; and Abbey, Kirk J., 4,621,131, Cl. 528-192.000.

Abe, Akira: *See*—
Kishimoto, Shinzo; Abe, Akira; and Ohno, Shigeru, 4,621,047, Cl. 430-393.000.

Abe, Kei: *See*—
Ushida, Masayasu; Nakamura, Yukio; and Abe, Kei, 4,620,513, Cl. 123-146.50A.

Abe, Takasi: *See*—
Kudo, Toichi; Abe, Takasi; and Ogawa, Seiichiro, 4,621,317, Cl. 364-147.000.

Abens, Sandors G.; and Farooque, Mohammad, to Energy Research Corporation. Apparatus for purifying hydrogen. 4,620,914, Cl. 204-265.000.

Abildgaard, William H.; and Szanto, Elmer G., to Velo-Bind, Inc. Binding strips for rectangular hole punched paper. 4,620,724, Cl. 281-15.00R.

Abthoff, Jorg: *See*—
Oblander, Kurt; Abthoff, Jorg; Schuster, Hans-Dieter; and Schmidt, Karlwalter, 4,620,448, Cl. 73-861.710.

Accupap, Inc.: *See*—
Hasselbrack, Robert, 4,620,548, Cl. 128-758.000.

Acocella, John: *See*—
Tomozawa, Minoru; Watson, E. Bruce; and Acocella, John, 4,620,863, Cl. 65-30.120.

Acome, Societies Anonyme: *See*—
Petinelli, Jean-Claude; and Bertier, Dominique, 4,621,169, Cl. 174-106.0SC.

Adams, John T., to Honeywell Inc. Adaptive control system. 4,620,668, Cl. 236-46.00R.

Adams, Paul R., Jr. Endoscope container and support apparatus. 4,620,527, Cl. 128-4.000.

Advanced Energy Concepts '81, Limited: *See*—
Distin, Robert; and Shaffer, James E., 4,620,456, Cl. 74-800.000.
Distin, Robert; and Shaffer, James E., 4,620,457, Cl. 74-800.000.

Advanced Micro Devices, Inc.: *See*—
New, Bernard J., 4,621,341, Cl. 364-900.000.

Advanced Systems Incorporated: *See*—
Gurian, Marshall I.; and Pender, Don P., 4,620,894, Cl. 156-345.000.

Aeroil Products Company, Inc.: *See*—
Hale, Jordan C., 4,620,645, Cl. 222-146.200.

Ahern, David J., to British Telecommunications plc. Transmitting stereo audio programs in cable TV systems. 4,621,282, Cl. 358-86.000.

Aida, Satoshi; Matsumoto, Kenzo; Itoh, Ayao; Suzuki, Yoshinori; and Takamizawa, Kinya, to Kabushiki Kaisha Toshiba. Ultrasound hyperthermia apparatus. 4,620,546, Cl. 128-660.000.

Air-A-Plane Corporation: *See*—
Shepheard, Thomas E., 4,620,339, Cl. 14-71.500.

Air Products and Chemicals, Inc.: *See*—
Thurber, Scott W., 4,620,350, Cl. 29-235.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Onodera, Takayoshi; and Kagata, Tooru, 4,620,622, Cl. 192-36.000.

Aisin Seiki Kabushikikaisha: *See*—
Mitsui, Tsutomu; Kobayashi, Hideyuki; and Hirosawa, Kouichiro, 4,620,624, Cl. 192-0.076.
Murakami, Yuichi; Komuro, Kenichi; Kawai, Taneichi; Terabayashi, Gosaku; and Ohta, Hisatoshi, 4,621,223, Cl. 318-282.000.

Akagawa, Tomohiko: *See*—
Morita, Hideyo; Akagawa, Tomohiko; and Kita, Yasuo, 4,621,115, Cl. 524-494.000.

Akao, Hideyuki: *See*—
Taguchi, Toshimichi; and Akao, Hideyuki, 4,621,178, Cl. 219-10.55B.

Akutsu, Eiichi: *See*—
Fujii, Tadashi; Murakami, Kakuji; Akutsu, Eiichi; and Aruga, Tamotsu, 4,620,876, Cl. 106-22.000.

Albano, Vincent J., to Kent Corporation, The. Extendible merchandise shelving display. 4,620,489, Cl. 108-105.000.

Albertson, Carl N. Self-closing saw horse. 4,620,613, Cl. 182-153.000.

Aldinio, Giuseppe, to Nordica S.p.A. Ski boot incorporating a flex control device. 4,620,380, Cl. 36-121.000.

Alemanni, James C. Carriers for pin grid array. 4,620,632, Cl. 206-329.000.

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Allibert: *See*—
Poncet, Jean-Pierre; Joumard, Michel; Bonneton, Robert; and Chevaleyre, Robert, 4,620,831, Cl. 414-744.00A.

Allied Corporation: *See*—
Bluish, Joseph A.; and Hanson, Mark B., 4,621,335, Cl. 364-550.000.
Brooks, Mark A.; Tomala, Ambrose; and Casey, Gary L., 4,620,511, Cl. 123-145.00A.
Brooks, Mark A.; Tomala, Ambrose; and Casey, Gary L., 4,620,512, Cl. 123-145.00A.
Brown, G. Emerson, 4,620,565, Cl. 137-596.170.
Hopkins, Ronald J.; Thomas, Evan G.; and Kieta, Harold J., 4,620,934, Cl. 252-79.400.

Alps Electric Co., Ltd.: *See*—
Komagata, Atsushi, 4,621,296, Cl. 360-121.000.
Kondo, Shiro; and Sawada, Kenji, 4,621,174, Cl. 200-5.00R.

Aluminum Company of America: *See*—
Tarcy, Gary P.; Gavasto, Thomas M.; and Ray, Siba P., 4,620,905, Cl. 204-64.00R.

Alvord, Robert J.; Amberg, Robert; Fegan, Michael T.; and Kadlec, Joseph, to Zenith Electronics Corporation. Temperature compensated oscillator for raster scanned video display. 4,621,240, Cl. 331-113.00R.

Amada Company, Limited: *See*—
Taguchi, Masayuki, 4,620,465, Cl. 83-74.000.

Amakawa, Katsumi: *See*—
Kurando, Shigeo; Amakawa, Katsumi; and Kawamori, Yoshizo, 4,620,782, Cl. 355-14.0SH.

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Alvord, Robert J.; Amberg, Robert; Fegan, Michael T.; and Kadlec, Joseph, 4,621,240, Cl. 331-113.00R.

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Amdahl, Gene M.: *See*—
Amdahl, Carlton G.; Amdahl, Gene M.; and Reinschmidt, Robert, 4,621,201, Cl. 307-219.000.

American Home Products Corporation: *See*—
Hersh, Marvin; and Lentine, Charles W., 4,620,974, Cl. 424-37.000.
Scotese, Anthony C.; Santilli, Arthur A.; and Strike, Donald P., 4,621,142, Cl. 546-198.000.

American Optical Corporation: *See*—
Singer, Helmut; Bellantoni, Ellen; and LeBoeuf, Albert R., 4,620,954, Cl. 264-1.400.

American Standard Inc.: *See*—
Bell, Gerald A., 4,620,835, Cl. 417-17.000.
Kurtz, Ronald C., 4,620,567, Cl. 137-627.500.

AMP Incorporated: *See*—
Davis, Wayne S.; Defibaugh, George R.; and Fortuna, Jon A., 4,620,762, Cl. 339-91.00R.

Amra, Lutfi H.: *See*—
Chandler, Richard C.; and Amra, Lutfi H., 4,621,017, Cl. 428-328.000.

Anahara, Meiji; and Seiki, Kazuo, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Method of yarn piecing a spinning unit. 4,620,413, Cl. 57-261.000.

Anders, Gene A.: *See*—
Groezinger, John J.; and Anders, Gene A., 4,620,580, Cl. 152-153.000.

Anderson, Allen W.: *See*—
Chang, Martin M.; Tsao, George T.; and Anderson, Allen W., 4,621,164, Cl. 585-733.000.

Anderson, Dean A., to Hewlett-Packard Company. Print head for printing or vector plotting with a multiplicity of line widths. 4,621,273, Cl. 346-140.00R.

Anderson, John F., Jr.: *See*—
Long, Delmar D.; and Anderson, John F., Jr., 4,621,005, Cl. 428-86.000.

Ando, Haruhisa: *See*—
Takemoto, Iwao; Ohba, Shinya; Aoki, Masakazu; Ando, Haruhisa; Nakai, Masaaki; Ozaki, Toshifumi; and Imaide, Takuya, 4,621,291, Cl. 358-213.000.

Andrews, E. Trent; and Moore, Robert E. Pistol grip, bone drill. 4,620,539, Cl. 128-303.00R.

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Diamond, Fredric L.; and Andrews, Kenneth E., 4,620,479, Cl. 100-215.000.
Ang, Peter G. P., to Texaco Inc. Means and method for reducing carbon dioxide to provide formic acid. 4,620,906, Cl. 204-73.00R.
Anglewicz, Charles J.: *See—*
Hess, Edward C.; and Anglewicz, Charles J., 4,620,354, Cl. 29-417.000.
Anno, James N., to Research Dynamics Incorporated. High level gamma radiation dosimeter. 4,620,800, Cl. 374-132.000.
Aoki, Harumi: *See—*
Suzuki, Koji; Kawasaki, Masahiro; and Aoki, Harumi, 4,621,191, Cl. 250-201.000.
Aoki, Hisao: *See—*
Koisuka, Mikio; and Aoki, Hisao, 4,620,590, Cl. 165-150.000.
Aoki, Masakazu: *See—*
Takemoto, Iwao; Ohba, Shinya; Aoki, Masakazu; Ando, Haruhisa; Nakai, Masaaki; Ozaki, Toshifumi; and Imaide, Takuya, 4,621,291, Cl. 358-213.000.
Aoki, Toshio: *See—*
Suzuki, Kouji; Ikeda, Mitsushi; and Aoki, Toshio, 4,621,260, Cl. 340-719.000.
Aono, Toshiki: *See—*
Otomo, Nobuyuki; Chiba, Hiroaki; Uno, Tsuneo; Aono, Toshiki; and Suzuki, Kozo, 4,620,995, Cl. 427-420.000.
Aoyagi, Hidehito: *See—*
Hirosaki, Botaro; and Aoyagi, Hidehito, 4,621,355, Cl. 370-19.000.
Aoyama, Susumu: *See—*
Sugiuchi, Toshiyasu; Aoyama, Susumu; and Yoshida, Toshio, 4,620,454, Cl. 74-567.000.
Applegate, Barry G.; and London, William C., to Molins PLC. Applying labels to packets. 4,620,891, Cl. 156-212.000.
Arai, Kenji; and Inamo, Masaharu, to Diesel Kiki Co., Ltd. Apparatus for controlling a speed change gear. 4,621,328, Cl. 364-424.100.
Arai, Masami: *See—*
Yuzurihara, Itsuo; and Arai, Masami, 4,621,312, Cl. 363-26.000.
Arai, Shinichi: *See—*
Hirabayashi, Hisaaki; Sugimoto, Koichi; Arai, Shinichi; Masui, Tomoyuki; and Inaba, Hidetoshi, 4,620,436, Cl. 73-1.00B.
Sugimoto, Koichi; Hirabayashi, Hisaaki; Arai, Shinichi; and Sakaue, Shiyuki, 4,621,332, Cl. 364-513.000.
Arakawa, Masahiro: *See—*
Makino, Tomoaki; Arakawa, Masahiro; and Mitsui, Tomiyoshi, 4,620,951, Cl. 261-44.300.
Arakawa, Satoshi, to Fuji Photo Film Co., Ltd. Radiation image storage panel. 4,621,196, Cl. 250-483.100.
Arata, Hiroto: *See—*
Saito, Hiromichi; Arata, Hiroto; Kimura, Kazuo; Fujisawa, Kazuo; and Yamamoto, Fumihiro, 4,620,507, Cl. 122-6.00B.
Archery Designs, Inc.: *See—*
Peck, Paul L., 4,620,523, Cl. 124-35.00A.
Arima, Itsuo: *See—*
Ochiai, Kumi; Horie, Hiromichi; Arima, Itsuo; and Morita, Mikio, 4,620,933, Cl. 252-62.540.
Aritomi, Mitsutoshi; and Terauchi, Makoto, to Mitsubishi Petrochemical Co., Ltd. Aromatic polythioetheramide. 4,621,134, Cl. 528-337.000.
Armand, Michel; Muller, Daniel; and Chabagno, Jean-Michel, to Societe Nationale Elf Aquitaine; and Hydro-Quebec. Macromolecular material of ionic conduction for producing electrolytes or electrodes. 4,620,944, Cl. 252-518.000.
Arntz, Dietrich; Prescher, Gunter; Burkhardt, Werner; Heilos, Johannes; and Manner, Reinhard, to Degussa Aktiengesellschaft. Process for preparing abrasion-resistant coated catalysts. 4,621,072, Cl. 502-504.000.
Arraval, Valentim. Finger-operated dental care implement. 4,620,528, Cl. 128-62.00A.
Aruga, Tamotsu: *See—*
Fujii, Tadashi; Murakami, Kakuji; Akutsu, Eiichi; and Aruga, Tamotsu, 4,620,876, Cl. 106-22.000.
Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Fukuoka, Shinsuke; and Chono, Masazumi, 4,621,149, Cl. 560-24.000.
Kitamura, Kazuyuki, 4,621,021, Cl. 428-364.000.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Suzuki, Koji; Kawasaki, Masahiro; and Aoki, Harumi, 4,621,191, Cl. 250-201.000.
Asari, Takashi: *See—*
Koide, Masakazu; Okazaki, Takashi; and Asari, Takashi, 4,620,583, Cl. 164-154.000.
ASC Incorporated: *See—*
Alexander, Michael P., 4,620,746, Cl. 296-201.000.
Asea Aktiebolag: *See—*
Vancata, Oldrich, 4,621,184, Cl. 219-121.0PY.
Ashihara, Yoshihiro; Suzuki, Hiromasa; and Kasahara, Yasushi, to Fujirebio Kabushiki Kaisha. Reagents containing an anti-ligand bound to an anti-enzyme and methods for employing said reagents in an immunoassy. 4,621,048, Cl. 435-5.000.
Ashimori Industry Co., Ltd.: *See—*
Nagao, Kosuke; Ishii, Shuzo; Shinka, Noriyasu; Maeno, Yoshihiro; and Morita, Naoki, 4,620,677, Cl. 242-107.600.
Asics Corporation: *See—*
Tsuchida, Akira, 4,620,705, Cl. 273-73.00A.
AT&T Bell Laboratories: *See—*
Brasen, Daniel; DiGiuseppe, Michael A.; Lourenco, Jose A.; and Mahajan, Subhash, 4,620,854, Cl. 23-293.00R.
Brown, Earl F., 4,621,257, Cl. 340-365.00P.
Heiter, George L., 4,621,244, Cl. 333-81.00A.
Naiman, Sheldon; and Pector, Scott W., 4,621,357, Cl. 370-58.000.
AT&T Technologies, Inc.: *See—*
Wiechard, Charles A., 4,620,958, Cl. 264-297.200.
Ateliers Bouvier: *See—*
Poncet, Jean-Pierre; Joumard, Michel; Bonneton, Robert; and Chevaleyre, Robert, 4,620,831, Cl. 414-744.00A.
Atlantic Richfield Company: *See—*
Perkins, Thomas K., 4,620,592, Cl. 166-245.000.
Statton, Garry L.; and Gaul, James M., 4,621,105, Cl. 521-107.000.
Atsugi Motor Parts Co., Ltd.: *See—*
Emura, Junichi; and Kanari, Issei, 4,620,619, Cl. 188-319.000.
Autoipari Kutato es Fejleszto allala: *See—*
Ivony, Jozsef; Madocsay, Attila; Ratsko, Istvan; Horvath, Bela; and Madi, Jeno , 4,620,717, Cl. 280-432.000.
Automated Packaging Systems, Inc.: *See—*
Easter, William M.; Gifford, Eric; Wehrmann, Rick S.; and Liebhart, Dana, 4,620,888, Cl. 156-64.000.
Avery International Corporation: *See—*
Lad, Dalubhai M., 4,621,009, Cl. 428-216.000.
Ayres, Barry E.: *See—*
O'Callaghan, Cynthia H.; Ayres, Barry E.; Livermore, David G. H.; Newall, Christopher E.; and Weir, Niall G., 4,621,081, Cl. 514-206.000.
Baba, Yoshio; Uno, Teruo; Yoshida, Hideo; and Shoji, Yoshifusa, to Sumitomo Light Metal Industries, Ltd. Aluminum alloy having a high electrical resistance and an excellent formability. 4,620,961, Cl. 420-542.000.
Bachmann, Heinrich; and Portmann, Plato, to Wella Aktiengesellschaft. Composition and process for the oxidative dyeing of hair. 4,620,850, Cl. 8-406.000.
Backhouse, Alan J.; Frangou, Andrew; and Thorne, Stephen J., to Imperial Chemical Industries PLC. Water-born coating compositions comprising metallic powder or flake pigments. 4,621,112, Cl. 524-145.000.
Baer, James W.; Hoshiko, Henry H.; McIntosh, Robert P.; Reilly, Charles M.; Romano, Paul M.; and Hargarten, James W., to Storage Technology Partners II. Beam alignment system. 4,621,351, Cl. 369-44.000.
Bailey, Carl J., to Tandem Computers Incorporated. Parallel grounding scheme. 4,621,199, Cl. 307-147.000.
Baird, John P.; Linnett, Ian W.; and MacLeod, William J. Wind machine with clutch having losh motion characteristic. 4,620,834, Cl. 416-32.000.
Baker, David E.; Kelly, Howard L.; and Meranda, Keith W., to International Business Machines Corporation. Radial reform head. 4,620,572, Cl. 140-105.000.
Bale, Christopher R.; and Gill, Beresford R., to Imperial Group Public Limited Company. Tobacco smoke filters. 4,620,553, Cl. 131-198.100.
Bandag Licensing Corporation: *See—*
Brewer, Donaldee, 4,620,561, Cl. 137-116.300.
Banks, Bruce A.; and Rutledge, Sharon K., to United States of America, National Aeronautics and Space Administration. Ion beam sputter etching. 4,620,898, Cl. 156-643.000.
Baranyi, Giuseppa: *See—*
Kazmaier, Peter M.; Baranyi, Giuseppa; and Loutfy, Rafik O., 4,621,038, Cl. 430-59.000.
Bard, Martin, to Buchtal Gesellschaft mit berschrankter Haftung. Tile-shaped composite element. 4,621,001, Cl. 428-49.000.
Barfurth, Dieter; and Nestler, Heinz, to Dynamit Nobel AG. Water-soluble triethanolamine titanates. 4,621,148, Cl. 556-54.000.
Bargigia, Gianangelo; and Scapin, Mauro, to Montefluos S.p.A. Compositions based on 1,1,2-trichlorotrifluoroethane for industrial washing. 4,620,946, Cl. 252-545.000.
Barksdale, John S., to Ford Motor Company. Pin loading cone synchronizing clutch. 4,620,623, Cl. 192-53.00E.
Bart, Stan; and Srivastava, Gopal K., to Zenith Electronics Corporation. Digital sync separator and differentiator. 4,621,289, Cl. 358-153.000.
Bartashevich, Svyatoslav A.: *See—*
Stepanenko, Alexandr V.; Voitov, Vladimir G.; Karpitsky, Viktor S.; and Bartashevich, Svyatoslav A., 4,620,432, Cl. 72-73.000.
Bartelt, Thomas P. Device for holding containers. 4,620,631, Cl. 206-217.000.
Barth, James R.; and Choate, Thomas G. A., to Exxon Production Research Company. Flowline swivel with removable product seal surfaces. 4,620,728, Cl. 285-14.000.
Barton, Derek H. R.; Bronstein-Bonte, Irena Y.; and Taylor, Lloyd D., to Polaroid Corporation. Optical filter agents and photographic products and processes containing same. 4,621,156, Cl. 564-250.000.
BASF Aktiengesellschaft: *See—*
Denzinger, Walter; Hartmann, Heinrich; Perner, Johannes; and Raubenheimer, Hans-Juergen, 4,621,127, Cl. 526-193.000.
Lechtken, Peter; Trauth, Hubert; Weiss, Stefan; and Hettche, Albert, 4,621,109, Cl. 524-83.000.
Petersen, Harro; Immel, Gunther; Weiss, Wolfram; Schmidt, Horst; and Busse, Gerd, 4,621,133, Cl. 528-252.000.
Baumann, Benny, to Ibico AG. Punching machine. 4,620,468, Cl. 83-524.000.
Baumann, John A.: *See—*
Michel, Christian G.; Schachter, Rozalie; Kuck, Mark A.; Baumann, John A.; and Raccah, Paul M., 4,620,968, Cl. 423-299.000.
Baumgartner, Armin: *See—*
Dorn, Raimund; and Baumgartner, Armin, 4,620,862, Cl. 65-18.100.

Baxendale, James F.: *See—*
Jasper, Louis J., Jr.; DeSantis, Charles M.; and Baxendale, James F., 4,621,218, Cl. 315-3.600.

Baxter, Paul L.; MacKirdy, Iain S.; and Wright, Christopher T., to Interox Chemicals Limited. Activation of aqueous hydrogen peroxide with manganese catalyst and alkaline earth metal compound. 4,620,935, Cl. 252-99.000.

Baxter Travenol Laboratories, Inc.: *See—*
Kamen, Dean L., 4,620,690, Cl. 251-8.000.

Bayer Aktiengesellschaft: *See—*
Burow, Wilfried; Printzen, Helmut; Brunn, Horst; and Nollen, Klaus, 4,620,879, Cl. 106-304.000.
Dietrich, Manfred; Schmidt, Manfred; Wiedermann, Rolf; and Konig, Klaus, 4,621,104, Cl. 521-107.000.
Jager, Horst; Langheinrich, Klaus; and Herd, Karl-Josef, 4,621,138, Cl. 544-76.000.
Meyer, Horst; Wehinger, Egbert; Garthoff, Bernward; and Kazda, Stanislav, 4,621,082, Cl. 514-212.000.
Regel, Erik; Buchel, Karl H.; and Plempel, Manfred, 4,621,095, Cl. 514-383.000.
Ulrich, Rosentreter; Thomas, Cunter; and Knorr, Andreas, 4,621,093, Cl. 514-355.000.
Wingler, Frank; Koch, Otto; Lindner, Christian; and Reinking, Klaus, 4,621,117, Cl. 525-67.000.

Bayer, Bryce E.: *See—*
Cates, Billy E.; Cok, Ronald S.; and Bayer, Bryce E., 4,621,337, Cl. 364-727.000.

Bazell, Seymour: *See—*
Goldberg, Edward M.; and Bazell, Seymour, 4,620,846, Cl. 604-28.000.

Beachley, Orville T., Jr., to State University of New York. Novel trivalent organometallic compounds and methods of preparing same. 4,621,147, Cl. 556-1.000.

Beale, Harry A. Glass having controllable infrared transmission. 4,621,028, Cl. 428-432.000.

Bechtel International Corporation: *See—*
Khlafallah, Mohamed Z.; and Lee, Hong M., 4,620,688, Cl. 248-542.000.
Leibson, Irving; and Huettenhain, Horst, 4,620,672, Cl. 241-21.000.

Beck, James R.; and Lynch, Michael P., to Eli Lilly and Company. Herbicidal and algicidal 1,5-disubstituted-1H-pyrazole-4-carboxamides. 4,620,865, Cl. 71-67.000.

Becton, Dickinson and Company: *See—*
Nugent, Edward L., 4,620,549, Cl. 128-763.000.

Beecham Group p.l.c.: *See—*
Ward, Robert W.; and Hughes, Ian, 4,621,089, Cl. 514-303.000.

Beer, Arthur G., to General Motors Corporation. Access plug for threaded holes in electric starting apparatus. 4,620,641, Cl. 220-288.000.

Beil, Valentin: *See—*
Herr, Francis V.; Walklet, Thomas B.; Hansen, James G.; Hasler, Theodore J.; Beil, Valentin; Donlon, Harold E.; and Christian, Ken E., 4,620,636, Cl. 211-126.000.

Beilin, Solomon L: *See—*
Zwemer, Dirk A.; Beilin, Solomon I.; Truong, Long K.; and Lipton, Lewis T., 4,620,916, Cl. 204-299.00R.

Belanger, Germain: *See—*
L'Esperance, Chantal; and Belanger, Germain, 4,620,401, Cl. 52-309.150.

Belanger, Inc.: *See—*
Belanger, James A., 4,620,805, Cl. 384-297.000.

Belanger, James A., to Belanger, Inc. Plastic bearing and housing assembly. 4,620,805, Cl. 384-297.000.

Belcher, R. Allan, to Burr-Brown Corporation. Apparatus and methods for analogue-to-digital conversion. 4,621,254, Cl. 340-347.00M.

Bell, Gerald A., to American Standard Inc. Pump protection system. 4,620,835, Cl. 417-17.000.

Bell, Wilson A., to USM Corporation. Mixer device. 4,620,793, Cl. 366-76.000.

Bellantoni, Ellen: *See—*
Singer, Helmut; Bellantoni, Ellen; and LeBoeuf, Albert R., 4,620,954, Cl. 264-1.400.

Beloit Corporation: *See—*
Kirchner, Edward C., 4,620,675, Cl. 241-261.300.
Pulkowski, Jeffrey H.; and Siler, Steven J., 4,621,177, Cl. 219-10.49A.

Belorussky Politekhnichesky Institut: *See—*
Stepanenko, Alexandr V.; Voitov, Vladimir G.; Karpitsky, Viktor S.; and Bartashevich, Svyatoslav A., 4,620,432, Cl. 72-73.000.

Beneze, Heinz W., to Firestone Tire & Rubber Company, The. Penetrating roofing fastening and sealing system. 4,620,402, Cl. 52-410.000.

Bennett, Bruce A.: *See—*
Meyer, Charles D.; and Bennett, Bruce A., 4,620,708, Cl. 273-192.000.

Berg, Lloyd; and Warren, Karl J. Separation of acetone from methanol by extractive distillation. 4,620,901, Cl. 203-51.000.

Bergman, Clark, to Multi-Arc Vacuum Systems, Inc. Electric arc vapor deposition method and apparatus. 4,620,913, Cl. 204-192.00R.

Berkey, George E., to Corning Glass Works. Method for making index-profiled optical device. 4,620,861, Cl. 65-3.120.

Bernini, Giuseppe, to Secifarma S.p.A. Process for the enantiomeric resolution of mixtures of D and L-6-methoxy-alpha-methyl-2-naphthaleneacetic acid and resolving agent for said process. 4,621,152, Cl. 562-401.000.

Bertier, Dominique: *See—*
Petinelli, Jean-Claude; and Bertier, Dominique, 4,621,169, Cl. 174-106.0SC.

Bertiller, Roland, to Mauser-Werke Oberndorf GmbH. Training cartridge. 4,620,485, Cl. 102-444.000.

Bertolli, Lino, to Ellebi s.a.s. Di Lino Bertolli Friglio & C. Frame for glasses which permits the mounting of accessory elements. 4,620,778, Cl. 351-51.000.

Besson, Rene ; and Meister, Pierre-Andre , to ETA SA Fabriques d'Ebauches. Electronic time piece comprising a device for adjusting the time display. 4,620,797, Cl. 368-21.000.

Best, Betty L.: *See—*
Shanks, Teddy L., 4,620,736, Cl. 293-116.000.

Best, Franklin L.: *See—*
Shanks, Teddy L., 4,620,736, Cl. 293-116.000.

Beyersbergen van Henegouwen, Cornelis M.; Koken, Karel G. M.; and Olierook, John C. J., to U.S. Philips Corporation. Cassette with cover latches controlling the cover opening direction. 4,621,297, Cl. 360-132.000.

Bialas, John S., Jr.; Daniels, Richard J.; and Yoder, Joseph W., to International Business Machines Corporation. Soft error protection circuit for a storage cell. 4,621,345, Cl. 365-205.000.

Bianchi International: *See—*
Cook, Clifton L., 4,620,654, Cl. 224-243.000.

Bihari, Ferenc: *See—*
Dombay, Zsolt; Grega nee Toth, Erzsebet; Nagy, Jozsef; Pavliscsak, Csaba; Tasi, Laszlo ; Toth, Andras; Toth, Oszkar; Vitanyi, Judit; Bihari, Ferenc; Bohus, Peter; Inczedy, Peter; Magyari, Istvan; Kertesz nee Szabo, Marianna; Wohl, Laszlo ; and Ferenczi, Attila, 4,621,080, Cl. 514-187.000.

Billington, Raymond H.: *See—*
McClay, Archie R.; Billington, Raymond H.; and Ruckman, Chester W., 4,620,656, Cl. 227-5.000.

Binns, Phillip G.: *See—*
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Bio Clinic Corporation: *See—*
Williams, H. Albert; and Williams, Janet L., 4,620,337, Cl. 5-464.000.

Biocell Laboratories, Inc.: *See—*
Van Duzer, John P., 4,620,908, Cl. 204-157.680.

Bioresearch S.p.A: *See—*
Gennari, Federico, 4,621,056, Cl. 435-85.000.

Biotechnica International, Inc.: *See—*
Hatch, Randolph T., 4,621,153, Cl. 562-443.000.

Birk, Daniel J., to Pittway Corporation. Passive transformerless battery charging circuit. 4,621,225, Cl. 320-21.000.

Bishop, John A. Universally positionable book holder. 4,620,687, Cl. 248-447.200.

Bjorntwedt, Kris E. Protective cover of flexible sheet material. 4,620,396, Cl. 52-3.000.

Black & Decker, Inc.: *See—*
Moores, Gregory E., 4,620,796, Cl. 366-344.000.

Black, James A.; and Munson, Gregory J., to General Research, Inc. Stencil screen exposure apparatus. 4,620,787, Cl. 355-76.000.

Blackwell, Scotty, to Wilson, Jerrine, a part interest. Portable power table. 4,620,712, Cl. 280-47.200.

Blaesi, John E.: *See—*
Stewart, William S.; and Blaesi, John E., 4,621,062, Cl. 436-55.000.

Blanchard, Gilbert; and Prigent, Michel, to Pro-Catalyse. Composite catalyst for treatment of vehicular exhaust gases and process for the preparation of the catalyst. 4,621,071, Cl. 502-302.000.

Blatt, Leland F. Power clamp. 4,620,696, Cl. 269-32.000.

Blau, Frederick, Jr.: *See—*
Vandermeyden, Tom R.; Dufau, Oscar R.; and Blau, Frederick, Jr., 4,620,667, Cl. 236-20.00R.

Bloom, Stanley; and Hockings, Eric F., to RCA Corporation. Color selection means having a charged insulator portion for a cathode-ray tube. 4,621,214, Cl. 313-402.000.

Bloom, Ted E., to Pacal Molded Plastics. Ice fishing apparatus. 4,620,387, Cl. 43-17.000.

Bloomer, Ivan: *See—*
Bradshaw, Norman F.; and Bloomer, Ivan, 4,620,858, Cl. 55-222.000.

Blue Bell, Inc.: *See—*
Reeves, Allen R.; and Carson, Charles F., 4,620,603, Cl. 180-19.100.

Bluish, Joseph A.; and Hanson, Mark B., to Allied Corporation. Real time recall feature for an engine data processor system. 4,621,335, Cl. 364-550.000.

Blum, Arnold, to International Business Machines Corporation. Testing and diagnostic device for digital computers. 4,621,363, Cl. 371-25.000.

Blytas, George C.; Foster, E. Gordon; and Grimsby, F. Norman, to Shell Oil Company. Process for the production of dichlorohydrin. 4,620,911, Cl. 204-182.400.

Blytas, George C.: *See—*
Grimsby, F. Norman; and Blytas, George C., 4,620,912, Cl. 204-182.400.

BMD Badische Maschinenfabrik Durlach GmbH: *See—*
Muller, Gunter; Damm, Norbert; and Kuppinger, Gunter, 4,620,585, Cl. 164-169.000.

Bochumer Eisenhutte Heintzmann GmbH & Co. KG: *See—*
Heintzmann, Peter; Koppers, Manfred; Bohnes, Karlheinz; and Kunzer, Heinz, 4,620,748, Cl. 299-18.000.

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Tappe, Horst; Hofmann, Klaus; Hahnke, Manfred; and Bode, Albert, 4,620,853, Cl. 8-639.000.

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Grega nee Toth, Erzsebet; Koppany, Eniko ; Bodi, Tibor; Nagy, Jozsef; Dombay, Zsolt; Szarvas, Tibor; Horvath, Laszlo ; Szabo nee Muranyi, Ildiko ; Marton, Jozsef; Pozsar, Bela, Jr.; Viranyi, Sandor; Simon, Peter; Keseru, Jozsef; and Eifert, Jozsef, 4,620,871, Cl. 71-92.000.

Boebel, Manfred, to Richard Wolf GmbH. Instrument for sampling tissue specimens. 4,620,547, Cl. 128-754.000.

Boebert, William E.; and Kain, Richard Y., to Honeywell Inc. Secure data processing system architecture. 4,621,321, Cl. 364-200.000.

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Casals-Stenzel, Jorge; Weber, Karl-Heinz; Walther, Gerhard; Harreus, Albrecht; and Muacevic, Gojko, 4,621,083, Cl. 514-220.000.

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Umminger, Robert; Friebe, Walter-Gunar; Kampe, Wolfgang; Roesch, Androniki; and Wilhelms, Otto-Henning, 4,621,098, Cl. 514-562.000.

Boeing Company, The: *See*—
Buse, Leland C.; and Eastman, George A., 4,621,265, Cl. 342-169.000.
Reynolds, Gregory E., 4,620,362, Cl. 29-568.000.
Wiley, Edward R., 4,621,267, Cl. 342-462.000.

Bohacek, Jan, to Jani-Jack Limited. Mop-wringing devices. 4,620,340, Cl. 15-261.000.

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Bohus, Peter: *See*—
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Bok, Edward, to Integrated Automation Limited. Method for coating substrates. 4,620,997, Cl. 427-434.300.

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Holmberg, Rodney D.; and Bolstad, Brian K., 4,621,308, Cl. 362-154.000.

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Talbot, Jean-Guy, 4,620,604, Cl. 180-190.000.

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Shishov, Nikolai M.; Zelenetsky, Vladimir E.; Demina, Nadezhda A.; Bondarev, Ivan M.; Cherny, Alexandr N.; Moskvitin, Valery A.; and Rylov, Evgeny E., deceased, 4,620,847, Cl. 604-58.000.

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Kielman, Hendrik S.; and Bongers, Jan S., 4,620,936, Cl. 252-99.000.

Bonifay, Regis: *See*—
Quang, Dang Vu; Raimbault, Claude; Bonifay, Regis; and Le Page, Jean-Francois, 4,620,940, Cl. 252-373.000.

Bonneton, Robert: *See*—
Poncet, Jean-Pierre; Joumard, Michel; Bonneton, Robert; and Chevaleyre, Robert, 4,620,831, Cl. 414-744.00A.

Booij, Johannes, to Innus Industrial Nuclear Services S.A. Method for cleaning a steam generator. 4,620,881, Cl. 134-21.000.

Boore, Roger: *See*—
French, Peter R.; and Boore, Roger, 4,620,395, Cl. 51-241.0VS.

Booth, William O., Jr.; Galkiewicz, Thomas M.; and Forehand, Stanley L., to BTL Specialty Resins Corporation. Metal modified phenolic resin color developers. 4,620,874, Cl. 106-21.000.

Borchard, Ulrich; Mutschler, Ernst; Moehrke, Werner; Voelger, Karl-Dieter; and Wolf, Erwin, to Rohm GmbH Chemische Fabrik. 2,4,7-triamino-6-phenylpteridine. 4,621,085, Cl. 514-249.000.

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Lech, Thaddeus, Jr.; and Mullard, Bruce A., 4,620,626, Cl. 192-106.200.

Borg-Warner Corporation: *See*—
Kulczycki, Elaine S.; and Lamarche, Paul E., 4,620,621, Cl. 192-3.310.
Venema, Harry J., 4,621,227, Cl. 324-60.0CD.

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Miller, Roland E.; Borgardt, Henry; and Valek, John, 4,620,838, Cl. 425-135.000.

Borries, John A.; Rush, Earl E.; and Washeim, William S., to Rotor Tool Company, The. Portable air tool having built in transducer and calibration assembly. 4,620,449, Cl. 73-862.210.

Bourne, Stephen J. Method of treating smoking withdrawal syndrome. 4,621,074, Cl. 514-12.000.

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Richard, Pierre, 4,620,400, Cl. 52-227.000.

Bowman, Terry R. Carpet cutting tool. 4,620,368, Cl. 30-294.000.

Boyer, James A. Ignition distributor voltage generator. 4,620,522, Cl. 123-617.000.

Bradshaw, Norman F.; and Bloomer, Ivan, to Haden Schweitzer Corporation. Process and system for elimination of paint solvent vapors. 4,620,858, Cl. 55-222.000.

Brady, Robert T.; and Guyon, James G., to Vapor Corporation. Door seal. 4,620,490, Cl. 110-173.00R.

Brambilla, Luigi: *See*—
Scholz, Hansjurgen; Brambilla, Luigi; and Jahn, Walter, 4,620,721, Cl. 280-735.000.

Brandl, Gerhard. Oil pump with oscillating piston. 4,620,836, Cl. 417-364.000.

Brasen, Daniel; DiGiuseppe, Michael A.; Lourenco, Jose A.; and Mahajan, Subhash, to AT&T Bell Laboratories. Method of preparing indium ingots. 4,620,854, Cl. 23-293.00R.

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Vogg, Hubert; Braun, Hartmut; and Jindra, Gabriele, 4,620,492, Cl. 110-345.000.

Braun, Jerome M.; Chong, David; and Whittaker, Darren, to Intel Corporation. Personal development system. 4,621,319, Cl. 364-200.000.

Braun, Manfred E.: *See*—
Johns, David G.; Donlon, Kieran J.; and Braun, Manfred E., 4,621,252, Cl. 340-61.000.

Breckenfeld, Paul W.; Broughton, George L.; Macier, James E.; and Gibbs, Ronald E., to Outboard Marine Corporation. Air silencer for an internal combustion engine. 4,620,607, Cl. 181-229.000.

Breton S.p.A.: *See*—
Toncelli, Marcello, 4,620,525, Cl. 125-13.00R.

Brewer, Donaldee, to Bandag Licensing Corporation. Differential pressure control valve. 4,620,561, Cl. 137-116.300.

Brintec Systems Corporation: *See*—
Thevenaz, Armand, 4,620,757, Cl. 339-17.00C.

Brisson, Alfred G.: *See*—
Shene, William R.; Nowacki, Christopher; and Brisson, Alfred G., 4,620,545, Cl. 128-328.000.

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Ahern, David J., 4,621,282, Cl. 358-86.000.
Millar, Colin A., 4,620,789, Cl. 356-73.100.

Brodbeck, Howard D., to MG Industries. Method and apparatus for providing sterilized cryogenic liquids. 4,620,962, Cl. 422-24.000.

Bronstein-Bonte, Irena Y.: *See*—
Barton, Derek H. R.; Bronstein-Bonte, Irena Y.; and Taylor, Lloyd D., 4,621,156, Cl. 564-250.000.

Brooks, Mark A.; Tomala, Ambrose; and Casey, Gary L., to Allied Corporation. Glow plug having a conductive film heater. 4,620,511, Cl. 123-145.00A.

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Breckenfeld, Paul W.; Broughton, George L.; Macier, James E.; and Gibbs, Ronald E., 4,620,607, Cl. 181-229.000.

Broussard, Paul P.: *See*—
Faul, Donald; Broussard, Paul P.; and Granger, Donald W., 4,620,439, Cl. 73-40.700.

Brown, Bernard T., to Emerson Electric Co. Visual display of time schedule in a programmable thermostat. 4,621,336, Cl. 364-557.000.

Brown, Earl F., to AT&T Bell Laboratories. Video display touch detection digitizer. 4,621,257, Cl. 340-365.00P.

Brown, G. Emerson, to Allied Corporation. Integrated three way and isolation solenoid valve. 4,620,565, Cl. 137-596.170.

Brown, Ronald D., to Caterpillar, Inc. Adaptive welding apparatus having fill control correction for curvilinear weld grooves. 4,621,185, Cl. 219-124.340.

Brown, Thomas M. Cold weather face mask. 4,620,537, Cl. 128-201.130.

Brown & Williamson Tobacco Corporation: *See*—
Cantrell, Daniel V.; Halverstadt, Dale A.; and Gordon, David L., 4,620,557, Cl. 131-336.000.

Brown, Winthrop K.; and Lankford, Frank L., Jr., to Texaco Inc. Temperature stabilization system. 4,620,421, Cl. 62-3.000.

Brownstein, Scott A., to Eastman Kodak Company. Apparatus and method for controlling a thermal printer apparatus. 4,621,271, Cl. 346-76.0PH.

Bruder, Alan H., to Polaroid Corporation. Lithium batteries with laminar anodes. 4,621,035, Cl. 429-152.000.

Bruel & Kjaer Instruments, Inc.: *See*—
Jensen, Jorgen; and Michel, Gregory C., 4,620,446, Cl. 73-652.000.

Bruhin, Rolf: *See*—
Eggenschwiler, Andre M.; and Bruhin, Rolf, 4,620,322, Cl. 2-8.000.

Brun, Charles, to Union Siderurgique du Nord et de L'est de la France. Process and installation for continuous manufacturing of an old (over-aged) steel band having a coating of Zn, Al or Zn-Al alloy. 4,620,501, Cl. 118-67.000.

Brunn, Horst: *See*—
Burow, Wilfried; Printzen, Helmut; Brunn, Horst; and Nollen, Klaus, 4,620,879, Cl. 106-304.000.

Bryant, Michael J.; and Jones, Stephen J., to Standard Telephones and Cables Public Limited Company. Submarine cable joint housing. 4,621,168, Cl. 174-88.00C.

Brym, Stanley J., to Dynamics Corporation of America. Multi-purpose kitchen appliance. 4,620,476, Cl. 99-484.000.

BTL Specialty Resins Corporation: *See*—
Booth, William O., Jr.; Galkiewicz, Thomas M.; and Forehand, Stanley L., 4,620,874, Cl. 106-21.000.

Buchel, Karl H.: *See*—
Regel, Erik; Buchel, Karl H.; and Plempel, Manfred, 4,621,095, Cl. 514-383.000.

Buchtal Gesellschaft mit berschrankter Haftung: *See*—
Bard, Martin, 4,621,001, Cl. 428-49.000.

Buckhorn Material Handling Group Inc.: *See*—
Miller, Daniel A., 4,620,644, Cl. 220-334.000.

Budai, Zoltan; Mezei, Tibor; Lay nee Konya, Aranka; Petocz, Lujza; Grasser, Katalin; and Orr, Zsuzsanna, to Egis Gyogyszergyar. Pharmaceutical compositions with antianginal activity. 4,621,101, Cl. 514-640.000.

Budapesti Vegyimuvek: *See—*
Dombay, Zsolt; Grega nee Toth, Erzsebet; Nagy, Jozsef; Pavlicsak, Csaba; Tasi, Laszlo ; Toth, Andras; Toth, Oszkar; Vitanyi, Judit; Bihari, Ferenc; Bohus, Peter; Inczedy, Peter; Magyari, Istvan; Kertesz nee Szabo, Marianna; Wohl, Laszlo ; and Ferenczi, Attila, 4,621,080, Cl. 514-187.000.

Buhl, Siegfried: *See—*
Eckstein, Rolf; Buhl, Siegfried; and Krumm, Jurgen, 4,620,824, Cl. 409-233.000.

Builder, Stuart E.; and Ogez, John R., to Genentech, Inc. Purification and activity assurance of precipitated heterologous proteins. 4,620,948, Cl. 530-419.000.

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Gilbreath, William E., 4,620,608, Cl. 182-17.000.

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Neyer, Jean-Marie; Machon, Jean-Pierre; and Bujadoux, Karel, 4,621,124, Cl. 526-125.000.

Bukamier, Gary L.; and Rupert, Steven L. Selective sensor construction. 4,620,918, Cl. 204-403.000.

Bull, Jeffrey F. Mechanism for timing strand movement relative to rotation of spool holders or carriers for strand supply spools or bobbins. 4,620,473, Cl. 87-48.000.

Bunting Magnetics Company: *See—*
Meister, Richard P., 4,620,923, Cl. 209-223.00R.

Burden, George S.: *See—*
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Burger, Kurt; and Gruner, Heiko, to Robert Bosch GmbH. Method of making a thin-film strain gauge. 4,620,365, Cl. 29-610.0SG.

Burkhardt, Werner: *See—*
Arntz, Dietrich; Prescher, Gunter; Burkhardt, Werner; Heilos, Johannes; and Manner, Reinhard, 4,621,072, Cl. 502-504.000.

Burlington Industries, Inc.: *See—*
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Burow, Wilfried; Printzen, Helmut; Brunn, Horst; and Nollen, Klaus, to Bayer Aktiengesellschaft. Iron oxide yellow pigments having a low silking effect and a process for production thereof. 4,620,879, Cl. 106-304.000.

Burr-Brown Corporation: *See—*
Belcher, R. Allan, 4,621,254, Cl. 340-347.00M.

Burris, Michael V. Gilsonite-asphalt emulsion composition. 4,621,108, Cl. 523-340.000.

Burroughs Corporation: *See—*
Hazel, Robert L.; and Chan, Gilbert Y., 4,621,353, Cl. 369-112.000.
Lacher, William A., 4,620,813, Cl. 403-93.000.
Meder, Gregg T., 4,620,573, Cl. 140-123.000.

Burstein, Yigal: *See—*
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Burt, James R.: *See—*
Childers, Roger K.; and Burt, James R., 4,620,559, Cl. 133-3.00A.

Buse, Leland C.; and Eastman, George A., to Boeing Company, The. Millimeter wave passive/active simulator array and method of evaluating the tracking capability of an active/passive target seeker. 4,621,265, Cl. 342-169.000.

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Petersen, Harro; Immel, Gunther; Weiss, Wolfram; Schmidt, Horst; and Busse, Gerd, 4,621,133, Cl. 528-252.000.

Butler, Donald E.; and Topliss, John G., to Warner-Lambert Company. Saturated cycloalkyl[c] pyrrole-2(1H)-acetic acid amides and derivatives thereof. 4,621,097, Cl. 514-421.000.

Butterworth, Inc.: *See—*
Pacht, Amos, 4,620,562, Cl. 137-315.000.

Cain, Roger W.; and Harris, Norman R., to Universal Data Systems, Inc. Modem equalizer training using previously stored parameters. 4,621,366, Cl. 375-8.000.

Camp International, Inc.: *See—*
Lanier, Willard E.; and Paez, Juan B., 4,620,530, Cl. 128-75.000.

Campman, James P. Proximity detecting apparatus. 4,621,258, Cl. 340-567.000.

Canepa, Giacomo; and Ott, Klaus, to Gebruder Netzsch Maschinenfabrik GmbH & Co. Agitator mill. 4,620,673, Cl. 241-69.000.

Canon Kabushiki Kaisha: *See—*
Matsumura, Isao, 4,620,779, Cl. 351-211.000.
Miyamoto, Koichi, 4,620,781, Cl. 355-3.00R.
Suzuki, Akiyoshi; Sato, Hiroshi; and Ishiyama, Ichiro, 4,620,785, Cl. 355-53.000.
Tanaka, Kiyoharu; Yoshinaga, Kenji; Takeda, Kenji; Oguri, Shinichi; Takada, Yusaku; and Ohno, Akio, 4,620,783, Cl. 355-14.00D.
Yashiki, Yuichi, 4,620,996, Cl. 427-430.100.

Cantrell, Daniel V.; Halverstadt, Dale A.; and Gordon, David L., to Brown & Williamson Tobacco Corporation. Cigarette having a mouthpiece and method of making same. 4,620,557, Cl. 131-336.000.

Capizzi, Giuseppe N.; and Melgara, Marcello, to CSELT Centro Studi E Laboratori Telecomunicazioni S.p.A. Arbitration circuitry for deciding access requests from a multiplicity of components. 4,621,342, Cl. 364-900.000.

Caplan, Arnold I.; and Syftestad, Glenn T. Process of adapting soluble bone protein for use in stimulating osteoinduction. 4,620,327, Cl. 632-10.000.

Capps, David B., to Warner-Lambert Company. Method of treating leukemia with pyrazolo[3,4,5-kl]acridines. 4,621,086, Cl. 514-287.000.

Caprihan, Arvind, to Lovelace Medical Foundation. Pulsed NMR flow measurement. 4,621,234, Cl. 324-306.000.

Capriotti, Allen. Track drive converter. 4,620,602, Cl. 180-9.210.

Carbone, Luigi. Boat guide roller assembly. 4,620,716, Cl. 280-414.100.

Cargo Protectors, Inc.: *See—*
Mickelson, Thorwald J., 4,620,718, Cl. 280-507.000.

Carl Kurt Walther GmbH & Co. KG: *See—*
Temme, Karl; and Mehnert, Volker, 4,620,394, Cl. 51-163.200.

Carl Still GmbH & Co. KG.: *See—*
Lemke, Otto, 4,620,828, Cl. 414-684.300.
Tippmer, Kurt, 4,620,967, Cl. 423-236.000.

Carle & Montanari S.p.A.: *See—*
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Carlson, Curtis R.: *See—*
Reitmeier, Glenn A.; and Carlson, Curtis R., 4,621,286, Cl. 358-141.000.
Reitmeier, Glenn A.; and Carlson, Curtis R., 4,621,287, Cl. 358-141.000.

Carlson, Gary M.: *See—*
Lin, Ju-Chui; Carlson, Gary M.; and Abbey, Kirk J., 4,621,131, Cl. 528-192.000.

Carlson, John E., to Chem-Nuclear Systems, Inc. Solidification of aqueous radioactive waste using insoluble compounds of magnesium oxide. 4,620,947, Cl. 252-628.000.

Carlson, Larry W., to United States of America, Energy. Sewage sludge dewatering using flowing liquid metals. 4,620,493, Cl. 110-346.000.

Carolina Moldings, Inc.: *See—*
Crouch, Jack S.; and Zink, Edward F., 4,621,230, Cl. 324-110.000.

Carranza, Luis: *See—*
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Carrier Corporation: *See—*
Hopkinson, Harold H.; and Iiyama, Eiichi, 4,620,423, Cl. 62-77.000.

Carson, Charles F.: *See—*
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Casals-Stenzel, Jorge; Weber, Karl-Heinz; Walther, Gerhard; Harreus, Albrecht; and Muacevic, Gojko, to Boehringer Ingelheim KG. PAF-antagonistic diazepines. 4,621,083, Cl. 514-220.000.

Casey, Gary L.: *See—*
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Brooks, Mark A.; Tomala, Ambrose; and Casey, Gary L., 4,620,512, Cl. 123-145.00A.

Casper, Thomas J.; and Rasper, Susan M., to Envirex Inc. Polymeric microscreen support wheel and assembly. 4,620,927, Cl. 210-236.000.

Cassella Aktiengesellschaft: *See—*
Tappe, Horst; Hofmann, Klaus; Hahnke, Manfred; and Bode, Albert, 4,620,853, Cl. 8-639.000.

Caterpillar, Inc.: *See—*
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Coutant, Alan R., 4,620,560, Cl. 137-116.000.
Groezinger, John J.; and Anders, Gene A., 4,620,580, Cl. 152-153.000.

Cates, Billy E.; Cok, Ronald S.; and Bayer, Bryce E., to Eastman Kodak Company. Transformation circuit for implementing a collapsed Walsh-Hadamard transform. 4,621,337, Cl. 364-727.000.

Cay, Norman S., to Motion Manufacturing, Inc. Furnace loading system. 4,620,832, Cl. 414-786.000.

Celanese Corporation: *See—*
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Center for Immunological Studies, The: *See—*
Wyatt, Philip J.; and Lopapa, Alberto F., 4,621,063, Cl. 436-501.000.

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Chamberlin, Richard A.; and Pournejat, Mostafa, to Chamberlin, Richard A. Electroforming process. 4,620,903, Cl. 204-4.000.

Chambers, Geoffrey R.: *See—*
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Chan, Gilbert Y.: *See—*
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Chan, Wan-Kit: *See—*
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Chandler, Richard C.; and Amra, Lutfi H., to Kennecott Corporation. Corrosion and wear resistant graphite material and method of manufacture. 4,621,017, Cl. 428-328.000.

Chang, Clarence D.; and Miale, Joseph N., to Mobil Oil Corporation. Acid-catalyzed hydrocarbon conversion process. 4,620,921, Cl. 208-111.000.

Chang, Martin M.; Tsao, George T.; and Anderson, Allen W., to Purdue Research Foundation. Hydrocarbon production. 4,621,164, Cl. 585-733.000.

Chang, Tai-Hon P.; Coane, Philip J.; Hohn, Fritz-Jurgen; Molzen, Walter W., Jr.; and Zingher, Arthur R., to International Business Machines Corporation. Inspection of unsintered single layer or multilayer ceramics using a broad area electrical contacting structure. 4,621,232, Cl. 324-158.00R.

Chant, Bernard J.: *See—*
Mookherjee, Braja D.; Chant, Bernard J.; Evers, William J.; Wilson, Richard A.; Zampino, Michael J.; and Vock, Manfred H., 4,620,945, Cl. 252-522.00R.

Chantot, Hubert: *See—*
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Charlton Associates: *See—*
Charlton, Richard J.; Krueger, Leland R.; Noling, Richard M.; Saunders, Jimmy G.; and Elliott, Richard J., 4,620,359, Cl. 29-557.000.

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Chem-Nuclear Systems, Inc.: *See—*
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Cherny, Alexandr N.: *See—*
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Chester, Walt: *See—*
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Chevaleyre, Robert: *See—*
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Chevron Research Company: *See—*
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Chiba, Hiroaki: *See—*
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Chibnik, Sheldon, to Mobil Oil Corporation. Additives for improving low temperature characteristics of fuels and method for use thereof. 4,621,141, Cl. 544-358.000.

Childers Corporation: *See—*
Childers, Roger K.; and Burt, James R., 4,620,559, Cl. 133-3.00A.

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Chin, David D.: *See—*
Yau, Leopoldo D.; Gasser, Robert A., Jr.; Week, Kenneth R., Jr.; Yu, Jick M.; and Chin, David D., 4,620,986, Cl. 427-93.000.

Chiodo, Daniel J.; Shirley, Gaylord R.; and Oquendo, Joseph, to Medicore Inc. Cannular feeding apparatus. 4,620,410, Cl. 53-561.000.

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Barth, James R.; and Choate, Thomas G. A., 4,620,728, Cl. 285-14.000.

Chong, David: *See—*
Braun, Jerome M.; Chong, David; and Whittaker, Darren, 4,621,319, Cl. 364-200.000.

Chono, Masazumi: *See—*
Fukuoka, Shinsuke; and Chono, Masazumi, 4,621,149, Cl. 560-24.000.

Christ, Dieter. Gas turbine engine. 4,620,414, Cl. 60-39.340.

Christian, Ken E.: *See—*
Herr, Francis V.; Walklet, Thomas B.; Hansen, James G.; Hasler, Theodore J.; Beil, Valentin; Donlon, Harold E.; and Christian, Ken E., 4,620,636, Cl. 211-126.000.

Church & Dwight Co., Inc.: *See—*
Kaufman, George; and Lindlar, Ernest E., 4,620,664, Cl. 229-17.00R.

Ciba-Geigy Corporation: *See—*
Truog, Peter, 4,620,973, Cl. 424-10.000.

Ciccarelli, Roger N.; and Leon, Denise R., to Xerox Corporation. Developer compositions with fast admixing characteristics. 4,621,039, Cl. 430-106.000.

Cincinnati Incorporated: *See—*
Gabella, Francois; Graf, Raymond J.; and Koors, Carl W., 4,620,435, Cl. 72-389.000.

Clark, Malcolm J.: *See—*
Gore, Gordon B.; Clark, Malcolm J.; and Le Strange, John R., 4,620,605, Cl. 181-135.000.

Clausin, Pierre, to Proengin. Device for limiting the rotational movement of the external part of the swivel of a sail roller for sailing boats. 4,620,498, Cl. 114-106.000.

Claydon, Howard F.: *See—*
Claydon, Susan D.; and Claydon, Howard F., 4,620,683, Cl. 248-97.000.

Claydon, Susan D.; and Claydon, Howard F., to Ferdon, Elmer. Apparatus for supporting a flexible container in an open position. 4,620,683, Cl. 248-97.000.

Clean Rooms International: *See—*
Goossens, Harry J.; and Kamper, Frederic E., 4,620,869, Cl. 55-385.00A.

Coane, Philip J.: *See—*
Chang, Tai-Hon P.; Coane, Philip J.; Hohn, Fritz-Jurgen; Molzen, Walter W., Jr.; and Zingher, Arthur R., 4,621,232, Cl. 324-158.00R.

Coin Acceptors, Inc.: *See—*
Delpercio, Michael J.; and Holland, Charlie R., 4,620,684, Cl. 248-225.200.

Cok, Ronald S.: *See—*
Cates, Billy E.; Cok, Ronald S.; and Bayer, Bryce E., 4,621,337, Cl. 364-727.000.

Coker, Geoffrey G.: *See—*
Findlay, John W. A.; and Coker, Geoffrey G., 4,621,094, Cl. 514-357.000.

Cole, Leon M., to Great Lakes Chemical Corporation. Densified halogenated dimethylhydantoins. 4,621,096, Cl. 514-389.000.

Colineau, Joseph, to Societe d'Electronique de la Region Pays de Loire Serel. Video image projecting system with separate projecting devices for projecting a background component and sharp contours of an image. 4,621,281, Cl. 358-60.000.

Collins, Guy R., to Dow Chemical Company, The. Repeating block, oligomer-free, polyphase, thermoformable polyurethanes and method of preparation thereof. 4,621,113, Cl. 524-196.000.

Collins, Melvin R.: *See—*
Sumerford, Harold A.; and Collins, Melvin R., 4,620,568, Cl. 137-899.400.

Collipp, Bruce G., to Shell Oil Company. Tension leg platform anchoring method and apparatus. 4,620,820, Cl. 405-224.000.

Colt Industries Operating Corp.: *See—*
Henderson, Robert M.; and Zechlin, Richard, 4,620,521, Cl. 123-599.000.

Combastet, Michel P. Light processor. 4,620,791, Cl. 356-420.000.

Commissariat a l'Energie Atomique: *See—*
Pinto, Odile; and Scoazec, Henri, 4,620,964, Cl. 423-27.000.
Potard, Claude, 4,620,587, Cl. 164-475.000.

Compagnie Europeenne du Zirconium Cezus: *See—*
Horn, Laurent; Hautdidier, Jerome; and Soulet, Christian, 4,620,463, Cl. 82-1.00C.

Compagnie Francaise de Raffinage: *See—*
Petinelli, Jean-Claude; and Bertier, Dominique, 4,621,169, Cl. 174-106.0SC.

Computer Services Corporation: *See—*
Takiguchi, Kiyoaki, 4,620,634, Cl. 209-44.300.

Conant, Richard W., to Warrior Yachts, Inc. Sportfishing fighting chair. 4,620,686, Cl. 248-415.000.

Condon, James R. Pressure loss indicator. 4,620,500, Cl. 116-268.000.

Conwood Corporation: *See—*
Rosson, William M.; and Dean, William G., 4,620,556, Cl. 131-313.000.

Cook, Clifton L., to Michaels of Oregon Co.; and Bianchi International. Handgun holster with abrasion-resistant longitudinal spine. 4,620,654, Cl. 224-243.000.

Cooper Industries, Inc.: *See—*
Kilmer, Paul R., 4,620,574, Cl. 140-124.000.

Coralline, William. Bingo chip bell. 4,620,739, Cl. 294-65.500.

Corner, Margit. Methods for topically applying compositions to small animals. 4,620,849, Cl. 604-290.000.

Corning Glass Works: *See—*
Berkey, George E., 4,620,861, Cl. 65-3.120.

Corominas, Narciso L., to Metalquimia S.A. Filtration apparatus for use with a meat-piece fluid injector. 4,620,478, Cl. 99-533.000.

Coulson, Don J., to North Star Company, Inc. Vine trellis assembly. 4,620,389, Cl. 47-46.000.

Coutant, Alan R., to Caterpillar Inc. Modulating relief valve with dual functioning load piston. 4,620,560, Cl. 137-116.000.

Coutin, Pierre F.: *See—*
Hasquenoph, Jean, deceased; and Coutin, Pierre F., 4,620,680, Cl. 244-137.00A.

Cox, Frederick E.: *See—*
Torossian, Kevork A.; Heisler, Ralph T.; and Cox, Frederick E., 4,621,212, Cl. 310-260.000.

Crapser, James R., to S. C. Johnson & Son, Inc. Pump button and overcap assembly, and method of assembly of the overcap and pump button on a pump dispenser container. 4,620,646, Cl. 222-153.000.

Crofts, John G., to Cummins Engine Company, Inc. Twin-flow cooling system. 4,620,509, Cl. 123-41.100.

Crouch, Jack S.; and Zink, Edward F., to Carolina Moldings, Inc. Anti-tamper fastener shielding device. 4,621,230, Cl. 324-110.000.

CSELT Centro Studi E Laboratori Telecomunicazioni S.p.A.: *See—*
Capizzi, Giuseppe N.; and Melgara, Marcello, 4,621,342, Cl. 364-900.000.

Cuba, Ronald R.; Heidner, Richard C.; Wetor, Clyde R.; and Fiedler, Bruce H., to Gilson Brothers. Speed control for lawn and garden vehicle. 4,620,575, Cl. 180-307.000.

Cummins Engine Company, Inc.: *See—*
Crofts, John G., 4,620,509, Cl. 123-41.100.

Curty: *See—*
Lambert, Georges; and Ferre, Guy, 4,620,710, Cl. 277-235.00B.

Cushing, Jerome J. Underground discharge for downspouts and sump pumps. 4,620,817, Cl. 405-43.000.

Custom Engineering & Mfg. Co.: *See—*
Hendrickson, David L., 4,620,441, Cl. 73-327.000.

D. L. Auld Company, The: *See—*
Goodburn, William H.; and Waugh, Robert E., 4,620,985, Cl. 427-55.000.

Dab-O-Matic Corp.: *See—*
Schwartzman, Gilbert, 4,620,648, Cl. 222-490.000.

Daemer, Richard J.; Feinstone, Stephen M.; Gust, Ian D.; and Purcell, Robert H., to United States of America, Health and Human Services. Hepatitis A virus purified and triply cloned. 4,620,978, Cl. 424-89.000.

Daido Tokushuko Kabushiki Kaisha: *See—*
Takeuchi, Yukou; and Nagata, Masaru, 4,621,183, Cl. 219-121.0PL.

Daimler-Benz Aktiengesellschaft: *See*—
Oblander, Kurt; Abthoff, Jorg; Schuster, Hans-Dieter; and Schmidt, Karlwalter, 4,620,448, Cl. 73-861.710.
Scholz, Hansjurgen; Brambilla, Luigi; and Jahn, Walter, 4,620,721, Cl. 280-735.000.

Dainippon Screen Seizo Kabushiki Kaisha: *See*—
Inoue, Toshifumi, 4,621,360, Cl. 370-85.000.

Damm, Norbert: *See*—
Muller, Gunter; Damm, Norbert; and Kuppinger, Gunter, 4,620,585, Cl. 164-169.000.

Daniels, Richard J.: *See*—
Bialas, John S., Jr.; Daniels, Richard J.; and Yoder, Joseph W., 4,621,345, Cl. 365-205.000.

Das, Pankaj: *See*—
Davari, Bijan; and Das, Pankaj, 4,621,233, Cl. 324-158.00R.

Daum, Ronald E., to General Motors Corporation. Header connector and attachment. 4,621,305, Cl. 361-398.000.

Davan Industries: *See*—
Vanistendael, David M., 4,620,695, Cl. 269-24.000.

Davari, Bijan; and Das, Pankaj, to Rensselaer Polytechnic Institute. Non-destructive testing of semiconductors using acoustic wave method. 4,621,233, Cl. 324-158.00R.

Davis, Daniel W. Ambulatory wheelstand. 4,620,714, Cl. 280-242.00R.

Davis, James A.: *See*—
Schloman, William W., Jr.; and Davis, James A., 4,621,118, Cl. 525-130.000.

Davis, Wayne S.; Defibaugh, George R.; and Fortuna, Jon A., to AMP Incorporated. Electronic key assemblies. 4,620,762, Cl. 339-91.00R.

Dayco Corporation: *See*—
Long, Delmar D.; and Anderson, John F., Jr., 4,621,005, Cl. 428-86.000.

de la Vega, Alberto: *See*—
Rubio, Manuel J.; and de la Vega, Alberto, 4,620,876, Cl. 414-73.000.

Dean, William C., to FMC Corporation. Side guide for aircraft belt loader. 4,620,629, Cl. 198-836.000.

Dean, William G.: *See*—
Rosson, William M.; and Dean, William G., 4,620,556, Cl. 131-313.000.

Debe, Mark K., to Minnesota Mining and Manufacturing Company. Vapor transport reactor with composite metal-glass tube. 4,620,963, Cl. 422-240.000.

deBie, Jan R.: *See*—
Liebe, Johan; Gevën, Andreas S. G.; Driessen, Antonius J. G. C.; and deBie, Jan R., 4,621,216, Cl. 313-613.000.

De Bievre, Paul: *See*—
Vansant, Etienne; De Bievre, Paul; Peeters, Guido J.; Thijs, Anita; and Verhaert, Ingrid, 4,620,857, Cl. 55-75.000.

Defibaugh, George R.: *See*—
Davis, Wayne S.; Defibaugh, George R.; and Fortuna, Jon A., 4,620,762, Cl. 339-91.00R.

DeGussa AG: *See*—
Strack, Hans; Kleinschmit, Peter; and Parr, Ehrfried, 4,620,399, Cl. 52-172.000.

Degussa Aktiengesellschaft: *See*—
Arntz, Dietrich; Prescher, Gunter; Burkhardt, Werner; Heilos, Johannes; and Manner, Reinhard, 4,621,072, Cl. 502-504.000.
Schwarze, Werner; Wolff, Siegfried; Remmel, Hans; and Lambertz, Horst, 4,621,121, Cl. 525-329.300.

Dellutri, Joseph. All purpose cleaner containing D-Limonene. 4,620,937, Cl. 252-143.000.

Delpercio, Michael J.; and Holland, Charlie R., to Coin Acceptors, Inc. Support bracket assembly. 4,620,684, Cl. 248-225.200.

Delzer, Gary A.; and Kolts, John H., to Phillips Petroleum Company. Method for conversion of C_3 and C_4 hydrocarbons to olefinic products. 4,621,162, Cl. 585-651.000.

Demina, Nadezhda A.: *See*—
Shishov, Nikolai M.; Zelenetsky, Vladimir E.; Demina, Nadezhda A.; Bondarev, Ivan M.; Cherny, Alexandr N.; Moskvitin, Valery A.; and Rylov, Evgeny E., deceased, 4,620,847, Cl. 604-58.000.

Demski, Leonard W.: *See*—
Dolph, Darrel A.; Demski, Leonard W.; Taylor, Robert E.; and Loisel, Jean-Marie, 4,621,327, Cl. 364-424.000.

den Boef, Johannes H.: *See*—
van Uijen, Cornelis M. J.; and den Boef, Johannes H., 4,621,235, Cl. 324-307.000.

deNeufville, John P.; and Strand, David A., to Energy Conversion Devices, Inc. Method of forming a data storage medium and data storage device by congruent sublimation. 4,621,032, Cl. 428-688.000.

Denisevich, Peter, Jr.; Schroeder, Albert H.; Kurkov, Victor P.; and Suzuki, Shigeto, to Chevron Research Company. Bicarbazole-oxadiazole electroactive polymers. 4,620,943, Cl. 252-518.000.

Denzinger, Walter; Hartmann, Heinrich; Perner, Johannes; and Raubenheimer, Hans-Juergen, to BASF Aktiengesellschaft. Preparation of carboxyl-containing polymers. 4,621,127, Cl. 526-193.000.

DeSantis, Charles M.: *See*—
Jasper, Louis J., Jr.; DeSantis, Charles M.; and Baxendale, James F., 4,621,218, Cl. 315-3.600.

Desbois, Michel; and Disdier, Camille, to Rhone-Poulenc Specialites Chimiques. Process for the chlorination of aromatic derivatives. 4,621,160, Cl. 570-207.000.

Design Inceptions, Inc.: *See*—
Hanlon, William S., 4,620,652, Cl. 223-107.000.

Designs For Vision, Inc.: *See*—
Feinbloom, Richard E., 4,621,283, Cl. 358-93.000.

Desormiere, Bernard: *See*—
Duthoit, Francois; and Desormiere, Bernard, 4,621,192, Cl. 250-225.000.

Deutsch, Leslie J.: *See*—
Deutsch, Ralph; and Deutsch, Leslie J., 4,620,469, Cl. 84-1.240.

Deutsch, Ralph; and Deutsch, Leslie J., to Kawai Musical Instrument Mfg. Co., Ltd. Key assignor for a touch responsive electronic musical instrument. 4,620,469, Cl. 84-1.240.

Diamond, Fredric L.; and Andrews, Kenneth E., to A.K.G.S. Partnership. Aircraft trash compactor and box therefor. 4,620,479, Cl. 100-215.000.

Di Battista, Piero, to Montedison S.p.A.. Alkyl-substituted 4-methylpiperidine derivatives and use thereof as stabilizers. 4,621,110, Cl. 524-100.000.

Dick, Timber. Multi-function child carrier. 4,620,711, Cl. 280-30.000.

Dicker, Paul-Erik. Method of impregnating wood. 4,620,990, Cl. 427-291.000.

Dictaphone Corporation: *See*—
Sander, Willy M., 4,621,349, Cl. 369-25.000.
Sevitsky, Gary S.; Short, Kevin L.; and Paulson, Robert T., 4,621,350, Cl. 369-29.000.

Diebold, James P.; and Scahill, John W., to United States of America, Energy. Fluidizing device for solid particulates. 4,620,795, Cl. 366-241.000.

Diesel Kiki Co., Ltd.: *See*—
Arai, Kenji; and Inamo, Masaharu, 4,621,328, Cl. 364-424.100.

Dietrich, Herbert; and Mall, Gunther, to Pfaff Industriemaschinen GmbH. Transport device on an apparatus for letting out skins. 4,620,427, Cl. 69-47.000.

Dietrich, Manfred; Schmidt, Manfred; Wiedermann, Rolf; and Konig, Klaus, to Bayer Aktiengesellschaft. Process for the production of liquid bromine-containing alkoxylation products. 4,621,104, Cl. 521-107.000.

Digital Equipment Corporation: *See*—
Mayhew, Steven C., 4,621,323, Cl. 364-200.000.

DiGiuseppe, Michael A.: *See*—
Brasen, Daniel; DiGiuseppe, Michael A.; Lourenco, Jose A.; and Mahajan, Subhash, 4,620,854, Cl. 23-293.00R.

Dillon, Stephen M. Shell reloading machine with safety features. 4,620,472, Cl. 86-27.000.

Di Piazza, James J.: *See*—
Pampalone, Thomas R.; and Di Piazza, James J., 4,621,042, Cl. 430-271.000.

Disdier, Camille: *See*—
Desbois, Michel; and Disdier, Camille, 4,621,160, Cl. 570-207.000.

Distin, Robert; and Shaffer, James E., to Advanced Energy Concepts '81, Limited. Nutating drive mechanisms having spherical ball driving elements. 4,620,456, Cl. 74-800.000.

Distin, Robert; and Shaffer, James E., to Advanced Energy Concepts '81, Limited. Nutating drive mechanisms having roller driving elements. 4,620,457, Cl. 74-800.000.

Dobrovolny, Pierre; and Nicoletto, Dominic J., to Zenith Electronics Corporation. Intermediate frequency filter for a DBS receiver. 4,621,245, Cl. 333-202.000.

Dr. Ing. H.c.F. Porsche Aktiengesellschaft: *See*—
Martin, Roland, 4,620,616, Cl. 188-71.600.

Docutel/Olivetti Corporation: *See*—
Rawlins, Joan E., 4,621,326, Cl. 364-408.000.

Doddapaneni, Narayan, to Honeywell Inc. Halogenated organic solid depolarizer. 4,621,036, Cl. 429-194.000.

Dodgen Industries, Inc.: *See*—
Dodgen, John N., 4,620,335, Cl. 5-118.000.

Dodgen, John N., to Dodgen Industries, Inc. Lower bed structure for a recreational vehicle. 4,620,335, Cl. 5-118.000.

Dodson, Michael G.; and Presley, John R., to Interox America. Process for the assembly of wooden components and assembly of wooden components. 4,620,892, Cl. 156-319.000.

Doguchi, Nobushige; and Nagai, Yoshitaka, to Yoshida Kogyo K. K. Method for manufacturing a heat insulating sash bar. 4,620,355, Cl. 29-418.000.

Dolinski, Joseph: *See*—
Schilling, John; and Dolinski, Joseph, 4,621,285, Cl. 358-120.000.

Dolph, Darrel A.; Demski, Leonard W.; Taylor, Robert E.; and Loisel, Jean-Marie, to Nartron Corporation. Electronic power steering method and apparatus. 4,621,327, Cl. 364-424.000.

Dombay, Zsolt; Grega nee Toth, Erzsebet; Nagy, Jozsef; Pavliscsak, Csaba; Tasi, Laszlo ; Toth, Andras; Toth, Oszkar; Vitanyi, Judit; Bihari, Ferenc; Bohus, Peter; Inczedy, Peter; Magyari, Istvan; Kertesz nee Szabo, Marianna; Wohl, Laszlo ; and Ferenczi, Attila, to Eszakmagyarorszagi Vegyimuvek; and Budapesti Vegyimuvek. Synergistic fungicidal compositions. 4,621,080, Cl. 514-187.000.

Dombay, Zsolt: *See*—
Grega nee Toth, Erzsebet; Koppany, Eniko ; Bodi, Tibor; Nagy, Jozsef; Dombay, Zsolt; Szarvas, Tibor; Horvath, Laszlo ; Szabo nee Muranyi, Ildiko ; Marton, Jozsef; Pozsar, Bela, Jr.; Viranyi, Sandor; Simon, Peter; Keseru, Jozsef; and Eifert, Jozsef, 4,620,871, Cl. 71-92.000.

Dominguez, Richard L., to So-Luminaire Systems Corp. Combined solar tracking reflector and photovoltaic panel. 4,620,771, Cl. 350-258.000.

Donlon, Harold E.: *See*—
Herr, Francis V.; Walklet, Thomas B.; Hansen, James G.; Hasler, Theodore J.; Beil, Valentin; Donlon, Harold E.; and Christian, Ken E., 4,620,636, Cl. 211-126.000.

Donlon, Kieran J.: *See—*
Johns, David G.; Donlon, Kieran J.; and Braun, Manfred E., 4,621,252, Cl. 340-61.000.

Donnelly, Grace M., to General Foods Corporation. Computer-assisted laboratory notebook kit. 4,620,726, Cl. 282-1.00R.

Dorn, Raimund; and Baumgartner, Armin, to International Standard Electric Corporation. Process of fabricating an elongated glass body particularly a preform for optical waveguides. 4,620,862, Cl. 65-18.100.

Doroshuk, Charles M., to Schering A.G. Implantable bipolar stimulating electrode. 4,620,550, Cl. 128-785.000.

Dow Chemical Company, The: *See—*
Collins, Guy R., 4,621,113, Cl. 524-196.000.
Mendoza, Abel, 4,621,159, Cl. 568-726.000.
Orr, Edward W., 4,620,873, Cl. 106-1.170.

Dow Corning Corporation: *See—*
Gee, Ronald P., 4,620,878, Cl. 106-287.150.

Dresser Industries, Inc.: *See—*
Scruggs, David M., 4,621,031, Cl. 428-627.000.

Driessen, Antonius J. G. C.: *See—*
Liebe, Johan; Geven, Andreas S. G.; Driessen, Antonius J. G. C.; and deBie, Jan R., 4,621,216, Cl. 313-613.000.

Driggers, John M., to Westinghouse Electric Corp. Two-position sleeve brazing process. 4,620,662, Cl. 228-227.000.

Driggers, John M., to Westinghouse Electric Corp. Small diameter radiant tube heater. 4,621,182, Cl. 219-85.0BM.

Dufau, Oscar R.: *See—*
Vandermeyden, Tom R.; Dufau, Oscar R.; and Blau, Frederick, Jr., 4,620,667, Cl. 236-20.00R.

Duffey, Craig L.: *See—*
Schieser, Warren J.; Vickers, Stanley E.; and Duffey, Craig L., 4,620,411, Cl. 53-570.000.

Duflot, Pierrick: *See—*
Bodele, Gilbert; Duflot, Pierrick; Valentin, Bernard; and Huchette, Michel, 4,620,880, Cl. 127-60.000.

Duke University: *See—*
Wagner, Robert A.; and Poirier, Charles J., 4,621,339, Cl. 364-900.000.

Dumitru, Earl T.: *See—*
Lagow, Richard J.; and Dumitru, Earl T., 4,621,107, Cl. 522-131.000.

Dumont, Yves, to A. Lassonde & Fils Inc. Process for the continuous clarification of fresh fruit juice. 4,620,980, Cl. 426-330.500.

Duncan, William C. W., to Plessey Overseas Limited. Electrical connectors. 4,620,760, Cl. 339-45.00M.

Dunn, Roger. Chord selector for keyboard musical instruments. 4,620,471, Cl. 84-480.000.

Dunn, Stephen H. Ski and pole holder. 4,620,722, Cl. 280-814.000.

Du Pont de Nemours, E. I., and Company: *See—*
Farnham, William B.; and Middleton, William J., 4,621,125, Cl. 526-190.000.
Gervay, Joseph E., 4,621,043, Cl. 430-281.000.
Middleton, William J., 4,621,126, Cl. 526-192.000.
Morgan, Richard A., 4,621,116, Cl. 524-746.000.
Pasteris, Robert J., 4,620,870, Cl. 71-91.000.

Durstewitz, Thomas: *See—*
Kerpers, Werner; and Durstewitz, Thomas, 4,620,392, Cl. 49-382.000.

Duthoit, Francois; and Desormiere, Bernard, to Thomson-CSF. Device for measuring the gradient of a magnetic field by the magnetooptical effect. 4,621,192, Cl. 250-225.000.

Duvdevani, Ilan; Schulz, Donald N.; Kitano, Kissho; and Peiffer, Dennis G., to Exxon Research and Engineering Company. Acid base interacting polymer solutions. 4,621,111, Cl. 524-107.000.

Dyer, Jack L. Breeding phenomenon. 4,620,531, Cl. 128-79.000.

Dynamics Corporation of America: *See—*
Brym, Stanley J., 4,620,476, Cl. 99-484.000.

Dynamit Nobel AG: *See—*
Barfurth, Dieter; and Nestler, Heinz, 4,621,148, Cl. 556-54.000.

E. R. Squibb & Sons, Inc.: *See—*
Natarajan, Sesha I.; and Gordon, Eric M., 4,621,092, Cl. 514-343.000.

East Penn Manufacturing Co., Inc.: *See—*
Woolf, Harold L., 4,620,767, Cl. 339-255.00P.

Easter, William M.; Gifford, Eric; Wehrmann, Rick S.; and Liebhart, Dana, to Automated Packaging Systems, Inc. Labeling apparatus. 4,620,888, Cl. 156-64.000.

Eastman, George A.: *See—*
Buse, Leland C.; and Eastman, George A., 4,621,265, Cl. 342-169.000.

Eastman Kodak Company: *See—*
Brownstein, Scott A., 4,621,271, Cl. 346-76.0PH.
Cates, Billy E.; Cok, Ronald S.; and Bayer, Bryce E., 4,621,337, Cl. 364-727.000.
Hollister, Kenneth R., 4,621,120, Cl. 525-327.100.
Hyatt, John A., 4,621,146, Cl. 549-263.000.
Lee, James K., 4,621,221, Cl. 318-123.000.

Eaton Corporation: *See—*
Monick, Frederick R., 4,620,618, Cl. 188-196.0BA.
Yip, James K.; and Novacek, William J., 4,620,416, Cl. 60-384.000.

Eberle, Jurg, to Feramatic AG. Drive mechanism for transmitting force and motion along a path. 4,620,474, Cl. 91-418.000.

Ebrahimi, Jalal: *See—*
Irwin, George F.; and Ebrahimi, Jalal, 4,621,361, Cl. 370-85.000.

Echasseriau, Gilbert; LeFevre, Philippe; and Oliveau, Patrice, to Renix Electronique. Rotary potentiometer, particularly for measuring angular position. 4,621,250, Cl. 338-162.000.

Eckstein, Rolf; Buhl, Siegfried; and Krumm, Jurgen, to Werkzeugmaschinenfabrik Adolf Waldrich Coburg GmbH & Co. High-speed driving adapter for boring, milling and similar machine tools. 4,620,824, Cl. 409-233.000.

Ecole Centrale Des Arts et Manufactures: *See—*
Herve, Jacques M., 4,620,829, Cl. 414-720.000.

Efka-Werke Fritz Kiehn GmbH: *See—*
Ruppert, Heinrich W.; and Gatschmann, Klaus, 4,620,551, Cl. 131-75.000.

Eggenschwiler, Andre M.; and Bruhin, Rolf, to Eggenschwiler, Andre M. Electro-optic welding lens assembly. 4,620,322, Cl. 2-8.000.

Egis Gyogyszergyar: *See—*
Budai, Zoltan; Mezei, Tibor; Lay nee Konya, Aranka; Petocz, Lujza; Grasser, Katalin; and Orr, Zsuzsanna, 4,621,101, Cl. 514-640.000.

Eidenschink, Rudolf: *See—*
Romer, Michael; Krause, Joachim; Eidenschink, Rudolf; and Weber, Georg, 4,620,938, Cl. 252-299.630.

Eifert, Jozsef: *See—*
Grega nee Toth, Erzsebet; Koppany, Eniko ; Bodi, Tibor; Nagy, Jozsef; Dombay, Zsolt; Szarvas, Tibor; Horvath, Laszlo ; Szabo nee Muranyi, Ildiko ; Marton, Jozsef; Pozsar, Bela, Jr.; Viranyi, Sandor; Simon, Peter; Keseru, Jozsef; and Eifert, Jozsef, 4,620,871, Cl. 71-92.000.

Eke, Alan B., to Glasstite, Inc. Slide mounted door hinge assembly. 4,620,743, Cl. 296-146.000.

Ekholmer, Erik, to Mediplast AB. Device for regulating the flow rate in a tube. 4,620,564, Cl. 137-595.000.

Electricite de France: *See—*
Vialars, Jacques; Rossignol, Alain; Vidal, Andre ; and Sarrade, Lionel, 4,620,693, Cl. 254-335.000.

Electricite de France (S.N.): *See—*
Gery, Alain; Chantot, Hubert; and Gemignani, Francois, 4,620,566, Cl. 137-613.000.

Electronic Signature Lock Corporation: *See—*
Garcia, John D., 4,621,334, Cl. 364-550.000.

Elevator GmbH: *See—*
Kahkipuro, Matti; and Makinen, Heimo, 4,621,222, Cl. 318-146.000.

Eli Lilly and Company: *See—*
Beck, James R.; and Lynch, Michael P., 4,620,865, Cl. 71-67.000.

Ellebi s.a.s. Di Lino Bertolli Friglio & C: *See—*
Bertolli, Lino, 4,620,778, Cl. 351-51.000.

Ellenberger & Poensgen GmbH: *See—*
Heydner, Konrad, 4,620,735, Cl. 292-144.000.

Elliott, Richard J.: *See—*
Charlton, Richard J.; Krueger, Leland R.; Noling, Richard M.; Saunders, Jimmy G.; and Elliott, Richard J., 4,620,359, Cl. 29-557.000.

Elsten, Donald E. Removable bumper step for vehicles. 4,620,609, Cl. 182-92.000.

Emerson Electric Co.: *See—*
Brown, Bernard T., 4,621,336, Cl. 364-557.000.

Emhart Industries, Inc.: *See—*
Shedigian, Vandos, 4,621,301, Cl. 361-314.000.

Emura, Junichi; and Kanari, Issei, to Atsugi Motor Parts Co., Ltd. Variable-damping-force shock absorber. 4,620,619, Cl. 188-319.000.

Endo, Kazunaka: *See—*
Saikawa, Masahiko; Kanada, Eiji; and Endo, Kazunaka, 4,621,041, Cl. 430-204.000.

Endo, Keiji: *See—*
Sato, Atsushi; Endo, Keiji; Kawakami, Shigenobu; Yanagishita, Hitoshi; and Hayashi, Shozo, 4,621,302, Cl. 361-315.000.

Energy Conversion Devices, Inc.: *See—*
deNeufville, John P.; and Strand, David A., 4,621,032, Cl. 428-688.000.

Energy Research Corporation: *See—*
Abens, Sandors G.; and Farooque, Mohammad, 4,620,914, Cl. 204-265.000.

ENFO Grundlagenforschungs AG: *See—*
Simson, Dionizy, 4,620,419, Cl. 60-560.000.

Enoki, Takahiro; and Hashida, Takashi, to Nisso Sangyo Co., Ltd. Expansible corridor. 4,620,612, Cl. 182-113.000.

Envirex Inc.: *See—*
Casper, Thomas J.; and Rasper, Susan M., 4,620,927, Cl. 210-236.000.

Eszakmagyarorszagi Vegyimuvek: *See—*
Dombay, Zsolt; Grega nee Toth, Erzsebet; Nagy, Jozsef; Pavliscsak, Csaba; Tasi, Laszlo ; Toth, Andras; Toth, Oszkar; Vitanyi, Judit; Bihari, Ferenc; Bohus, Peter; Inczedy, Peter; Magyari, Istvan; Kertesz nee Szabo, Marianna; Wohl, Laszlo ; and Ferenczi, Attila, 4,621,080, Cl. 514-187.000.

Eszakmagyarorszagivegyimuvek: *See—*
Grega nee Toth, Erzsebet; Koppany, Eniko ; Bodi, Tibor; Nagy, Jozsef; Dombay, Zsolt; Szarvas, Tibor; Horvath, Laszlo ; Szabo nee Muranyi, Ildiko ; Marton, Jozsef; Pozsar, Bela, Jr.; Viranyi, Sandor; Simon, Peter; Keseru, Jozsef; and Eifert, Jozsef, 4,620,871, Cl. 71-92.000.

ETA SA Fabriques d'Ebauches: *See—*
Besson, Rene ; and Meister, Pierre-Andre , 4,620,797, Cl. 368-21.000.

Ethicon, Inc.: *See—*
Gertzman, Arthur A.; and Thompson, Darrell R., 4,620,541, Cl. 128-326.000.

Menezes, Edgar; and Steinheuser, Peter, 4,620,542, Cl. 128-335.500.

European Atomic Energy Community (Euratom): *See*—
Vansant, Etienne; De Bievre, Paul; Peeters, Guido J.; Thijs, Anita; and Verhaert, Ingrid, 4,620,857, Cl. 55-75.000.

Evers, William J.: *See*—
Mookherjee, Braja D.; Chant, Bernard J.; Evers, William J.; Wilson, Richard A.; Zampino, Michael J.; and Vock, Manfred H., 4,620,945, Cl. 252-522.00R.

Excelermatic Inc.: *See*—
Kraus, Charles E., 4,620,455, Cl. 74-798.000.

Exxon Production Research Company: *See*—
Barth, James R.; and Choate, Thomas G. A., 4,620,728, Cl. 285-14.000.

Exxon Research and Engineering Company: *See*—
Duvdevani, Ilan; Schulz, Donald N.; Kitano, Kissho; and Peiffer, Dennis G., 4,621,111, Cl. 524-107.000.
Fiato, Rocco A.; and Soled, Stuart L., 4,621,102, Cl. 518-700.000.
Fligner, Mark; and Luckenbach, Edward C., 4,620,508, Cl. 122-7.00R.

Farnham, William B.; and Middleton, William J., to Du Pont de Nemours, E. I., and Company. Tris(disubstituted amino)sulfonium perfluoroalkoxides and -perfluoroalkylmercaptides and process for their preparation. 4,621,125, Cl. 526-190.000.

Farooque, Mohammad: *See*—
Abens, Sandors G.; and Farooque, Mohammad, 4,620,914, Cl. 204-265.000.

Farrell, Edwin B. Adjustable belt stereo player holder. 4,620,653, Cl. 224-242.000.

Farrell, Frank C.; and Farrell, Margaret P. Porcelain fused to metal dental shade guide. 4,620,841, Cl. 433-26.000.

Farrell, Margaret P.: *See*—
Farrell, Frank C.; and Farrell, Margaret P., 4,620,841, Cl. 433-26.000.

Faul, Donald; Broussard, Paul P.; and Granger, Donald W., to Testrac, Inc. Method for determining borehole or cavity configuration through inert gas interface. 4,620,439, Cl. 73-40.700.

Fawzi, Mahdi B.; and Manring, Gary L., to Procter & Gamble Company, The. Gel-form topical antibiotic compositions. 4,621,075, Cl. 514-32.000.

Fay, James E.: *See*—
Fleischer, Glen R.; Glashagel, Barry B.; Harke, Elwood W.; Sokolowski, Robert C.; and Fay, James E., 4,621,011, Cl. 428-221.000.

Fedele, Daniel E.: *See*—
Kurtin, Stephen; McGurk, Dan L.; Fedele, Daniel E.; and Kelm, Edward C., 4,620,808, Cl. 400-83.000.

Federal-Mogul Corporation: *See*—
Ladin, Eli M., 4,620,625, Cl. 192-85.0CA.

Fegan, Michael T.: *See*—
Alvord, Robert J.; Amberg, Robert; Fegan, Michael T.; and Kadlec, Joseph, 4,621,240, Cl. 331-113.00R.

Feinbloom, Richard E., to Designs For Vision, Inc. Head-mounted coaxial image system for surgeons. 4,621,283, Cl. 358-93.000.

Feinstone, Stephen M.: *See*—
Daemer, Richard J.; Feinstone, Stephen M.; Gust, Ian D.; and Purcell, Robert H., 4,620,978, Cl. 424-89.000.

Felletier, Pierre: *See*—
Roberge, Gerald; Gavrilovic, Momcilo; and Felletier, Pierre, 4,621,198, Cl. 307-82.000.

Fenk, Josef, to Siemens Aktiengesellschaft. Differential amplifier circuit having controllable gain. 4,621,238, Cl. 330-254.000.

Feramatic AG: *See*—
Eberle, Jurg, 4,620,474, Cl. 91-418.000.

Ferdon, Elmer: *See*—
Claydon, Susan D.; and Claydon, Howard F., 4,620,683, Cl. 248-97.000.

Ferenczi, Attila: *See*—
Dombay, Zsolt; Grega nee Toth, Erzsebet; Nagy, Jozsef; Pavlicsak, Csaba; Tasi, Laszlo ; Toth, Andras; Toth, Oszkar; Vitanyi, Judit; Bihari, Ferenc; Bohus, Peter; Inczedy, Peter; Magyari, Istvan; Kertesz nee Szabo, Marianna; Wohl, Laszlo ; and Ferenczi, Attila, 4,621,080, Cl. 514-187.000.

Ferre, Guy: *See*—
Lambert, Georges; and Ferre, Guy, 4,620,710, Cl. 277-235.00B.

Feuling, James J. Apparatus and method for improving the efficiency of internal combustion engines and fluid pumping devices. 4,620,510, Cl. 123-90.600.

Fialla, Peter: *See*—
Guilbert, Curtis R.; and Fialla, Peter, 4,621,122, Cl. 525-422.000.

Fiat Auto S.p.A.: *See*—
Palazzetti, Mario; Re Fiorentin, Stefano; and Tufano, Giovanni, 4,620,799, Cl. 374-5.000.

Fiato, Rocco A.; and Soled, Stuart L., to Exxon Research and Engineering Co. Fischer-Tropsch hydrocarbon synthesis with high surface area Cu and K promoted reduced-carbided iron/manganese spinels. 4,621,102, Cl. 518-700.000.

Fiedler, Bruce H.: *See*—
Cuba, Ronald R.; Heidner, Richard C.; Wetor, Clyde R.; and Fiedler, Bruce H., 4,620,575, Cl. 180-307.000.

Field Effects, Inc.: *See*—
Halbach, Klaus, 4,621,236, Cl. 324-319.000.

Field, Gerald L. Nailing anchor and method of use. 4,620,403, Cl. 52-480.000.

Findlay, John W. A.; and Coker, Geoffrey G. Anti-histaminic pyridyl compounds. 4,621,094, Cl. 514-357.000.

Firestone Tire & Rubber Company, The: *See*—
Beneze, Heinz W., 4,620,402, Cl. 52-410.000.
Schloman, William W., Jr.; and Davis, James A., 4,621,118, Cl. 525-130.000.

Fischer, Hermann, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Rotary printing machine cylinder blanket construction and insertion tool. 4,620,482, Cl. 101-415.100.

Fisher-Baker Corporation: *See*—
Whellams, Geoffrey E., 4,620,571, Cl. 140-102.000.

Fleischer, Glen R.; Glashagel, Barry B.; Harke, Elwood W.; Sokolowski, Robert C.; and Fay, James E., to Kimberly-Clark Corporation. Agglomerated cellulosic particles. 4,621,011, Cl. 428-221.000.

Fleissner GmbH & Company: *See*—
Fleissner, Heinz, 4,620,345, Cl. 28-266.000.

Fleissner, Heinz, to Fleissner GmbH & Company. Apparatus for crimping and setting synthetic fiber groups. 4,620,345, Cl. 28-266.000.

Flexible Steel Lacing Company: *See*—
Gladding, Alfred E.; and Musil, Edward C., 4,620,657, Cl. 227-147.000.

Fligner, Mark; and Luckenbach, Edward C., to Exxon Research and Engineering Company. Gas discharge and/or distribution system. 4,620,508, Cl. 122-7.00R.

Fling, Russell T., to RCA Corporation. Piecewise linear digital signal processor as for digital video vertical detail processing. 4,621,290, Cl. 358-166.000.

Fluidmaster, Inc.: *See*—
Vandermeyden, Tom R.; Dufau, Oscar R.; and Blau, Frederick, Jr., 4,620,667, Cl. 236-20.00R.

FMC Corporation: *See*—
Dean, William C., 4,620,629, Cl. 198-836.000.
Roush, David M., 4,621,078, Cl. 514-127.000.

Fogg, Peter M.: *See*—
Gatti, John E.; Martin, Tammy C.; Hall, Jack P.; and Fogg, Peter M., 4,620,756, Cl. 339-17.00M.

Fohl, Artur, to TRW REPA Feinstanzwerk GmbH. Method for assembling a safety belt roll-up device, especially for protecting persons in motor vehicles. 4,620,357, Cl. 29-439.000.

Ford Motor Company: *See*—
Barksdale, John S., 4,620,623, Cl. 192-53.00E.

Forehand, Stanley L.: *See*—
Booth, William O., Jr.; Galkiewicz, Thomas M.; and Forehand, Stanley L., 4,620,874, Cl. 106-21.000.

Foreman, Fred R.; and Nayler, Douglas W. J., to NL Industries, Inc. Crown block compensator. 4,620,692, Cl. 254-277.000.

Formo, Jerome L., to O Tray Corporation. Serving tray. 4,620,488, Cl. 108-46.000.

Fortuna, Jon A.: *See*—
Davis, Wayne S.; Defibaugh, George R.; and Fortuna, Jon A., 4,620,762, Cl. 339-91.00R.

Foster, E. Gordon: *See*—
Blytas, George C.; Foster, E. Gordon; and Grimsby, F. Norman, 4,620,911, Cl. 204-182.400.

Fox, Lowell J.; and Manca, Joseph J., to Varian Associates, Inc. Electron beam scrambler. 4,621,219, Cl. 315-5.000.

Fracalossi, Roland N.; Greenhouse, Walter V. V.; and Sollers, Joseph S., to Wm. T. Burnett & Co., Inc. Polyester polyurethane foams having antistatic properties. 4,621,106, Cl. 521-130.000.

Frangou, Andrew: *See*—
Backhouse, Alan J.; Frangou, Andrew; and Thorne, Stephen J., 4,621,112, Cl. 524-145.000.

Fremerey, Johan K.; and Weller, Albrecht, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Magnetic bearing having triaxial position stabilization. 4,620,752, Cl. 310-90.500.

French, Peter R.; and Boore, Roger, to Valveserve Machines Limited. Valve grinding apparatus. 4,620,395, Cl. 51-241.0VS.

Frey, Thomas: *See*—
Reum, Helmut; Frey, Thomas; Grunwald, Werner; Imhof, Ernst; Komaroff, Iwan; Schmid, Gunther; and Schmid, Kurt, 4,620,516, Cl. 123-275.000.

Freytsis, Avrum: *See*—
Schwartz, Vladimir; and Freytsis, Avrum, 4,620,738, Cl. 294-64.100.

Frick, Ursula. Edge stiffener for plastic bags. 4,621,000, Cl. 428-40.000.

Friebe, Walter-Gunar: *See*—
Umminger, Robert; Friebe, Walter-Gunar; Kampe, Wolfgang; Roesch, Androniki; and Wilhelms, Otto-Henning, 4,621,098, Cl. 514-562.000.

Frieben, Wolfgang; and Gerhart, Fritz, to Merrell Dow Pharmaceuticals Inc. Process for preparing 5-vinyl-2-pyrrolidinone and intermediates therefor. 4,621,145, Cl. 548-543.000.

Friedrich, Axel; Konig, Wolfgang; Teetz, Volker; Geiger, Rolf; and Sandow, Jurgen K., to Hoechst Aktiengesellschaft. Cyclic peptides having somatostatin activity. 4,621,073, Cl. 514-11.000.

Friedrich Wilh. Schwing GmbH: *See*—
Simnovec, Andrej, 4,621,375, Cl. 455-603.000.

Frola, Pasquale. Connecting device for stiff electric conductors. 4,620,758, Cl. 339-22.00B.

Frost, Jonathan: *See*—
Wick, Alexander; Frost, Jonathan; and Lardenois, Patrick, 4,621,087, Cl. 514-300.000.

Frost, Lawrence W.: *See*—
Heinrich, Theodore M.; and Frost, Lawrence W., 4,621,231, Cl. 324-142.000.

Fuchikami, Takamasa: *See*—
Hirai, Kenji; Fuchikami, Takamasa; Hirose, Hiroaki; and Ojima, Iwao, 4,621,150, Cl. 560-51.000.

Fuji Jukogyo Kabushiki Kaisha: *See*—
Nagai, Masaaki, 4,620,518, Cl. 123-425.000.

Fuji Photo Film Co., Ltd.: *See*—
Arakawa, Satoshi, 4,621,196, Cl. 250-483.100.
Kishimoto, Shinzo; Abe, Akira; and Ohno, Shigeru, 4,621,047, Cl. 430-393.000.
Okita, Tsutomu; Tsuji, Nobuo; Mukaida, Yoshito; Hashimoto, Hiroshi; Nakagawa, Teruo; Hashimoto, Akiyoshi; and Ogasawara, Takahisa, deceased, 4,621,027, Cl. 428-425.900.
Sato, Tadahisa; Kawagishi, Toshio; and Furutachi, Nobuo, 4,621,046, Cl. 430-381.000.
Fuji Systems Corporation: *See*—
Kawaguchi, Nobuhisa, 4,621,029, Cl. 428-447.000.
Fuji Xerox Co., Ltd.: *See*—
Kimoto, Toshifumi; Itami, Teruhiko; Yamasawa, Akira; Nishikawa, Eiji; and Nishimura, Nobuo, 4,621,269, Cl. 346-74.400.
Fujieda, Toshiaki; and Kubo, Kazuyuki, to Hitachi Koki Company, Limited. Circuit arrangement for detecting error in print control apparatus. 4,621,343, Cl. 364-900.000.
Fujii, Tadashi; Murakami, Kakuji; Akutsu, Eiichi; and Aruga, Tamotsu, to Ricoh Company, Ltd. Aqueous ink for ink-jet printing. 4,620,876, Cl. 106-22.000.
Fujikawa, Junichi, to Toray Industries, Inc. Photosensitive polymer composition. 4,621,044, Cl. 430-281.000.
Fujikawa, Takao: *See*—
Moritoki, Masato; Fujikawa, Takao; Kitagawa, Kazuo; and Miyanaga, Junichi, 4,620,839, Cl. 425-405.00H.
Fujimori, Hiroyoshi: *See*—
Nishioka, Kimihiko; and Fujimori, Hiroyoshi, 4,621,284, Cl. 358-98.000.
Fujioka, Yoshisato, to Ricoh Company, Ltd. Front-diaphragm wide angle lens. 4,620,775, Cl. 350-449.000.
Fujirebio Kabushiki Kaisha: *See*—
Ashihara, Yoshihiro; Suzuki, Hiromasa; and Kasahara, Yasushi, 4,621,048, Cl. 435-5.000.
Fujisawa, Kazuo: *See*—
Saito, Hiromichi; Arata, Hiroto; Kimura, Kazuo; Fujisawa, Kazuo; and Yamamoto, Fumihiro, 4,620,507, Cl. 122-6.00B.
Fujisawa Pharmaceutical Co., Ltd.: *See*—
Takaya, Takao; and Takasugi, Hisashi, 4,621,084, Cl. 514-225.000.
Fujita, Yasuhiro, to Hitachi, Ltd. Apparatus for supplying taped parts. 4,620,655, Cl. 226-109.000.
Fujitsu Limited: *See*—
Ito, Takashi; and Nozaki, Takao, 4,621,277, Cl. 357-54.000.
Nakajima, Kazuo, 4,620,897, Cl. 156-602.000.
Fujitsu Ten Limited: *See*—
Takahashi, Minoru; Kano, Koichi; and Otsuka, Kan, 4,621,255, Cl. 340-347.0AD.
Fujiwara, Hideo: *See*—
Uesaka, Yasutaro; Fujiwara, Hideo; Hishiyama, Sadao; and Shiiki, Kazuo, 4,621,030, Cl. 428-607.000.
Fujiwara, Michio; Kazumoto, Yoshio; Nomaguchi, Tamotsu; and Kashiwamura, Kazuo, to Mitsubishi Denki Kabushiki Kaisha. Stirling engine. 4,620,418, Cl. 60-517.000.
Fujiwara, Osamu: *See*—
Tsutsumi, Masaru; Hagino, Hideo; and Fujiwara, Osamu, 4,621,033, Cl. 429-12.000.
Fukuda, Junji: *See*—
Kosuge, Masao; and Fukuda, Junji, 4,621,103, Cl. 521-28.000.
Fukuda, Kyohei, to Hitachi, Ltd. Projection lens for projection television. 4,620,773, Cl. 350-432.000.
Fukuo, Hidetoshi: *See*—
Yoshikawa, Kimio; Fukuo, Hidetoshi; and Kuroda, Juzo, 4,620,941, Cl. 252-408.100.
Fukuoka, Shinsuke; and Chono, Masazumi, to Asahi Kasei Kogyo Kabushiki Kaisha. Production of urethane compounds. 4,621,149, Cl. 560-24.000.
Fukurohata, Yoshihisa: *See*—
Mizutani, Minoru; and Fukurohata, Yoshihisa, 4,621,270, Cl. 346-76.0PH.
Fukusawa, Hiromichi; and Monzen, Takashi, to Terumo Corporation. Hollow fiber-type artificial lung. 4,620,965, Cl. 422-46.000.
Fuller Company: *See*—
Hanstine, Kenneth W.; Lukacz, Stephen A.; and Nelson, Jeffrey N., 4,620,674, Cl. 241-121.000.
Furuhashi, Ryoko: *See*—
Hijikata, Kenichi; Sato, Katsuyuki; Maruyama, Hitoshi; and Furuhashi, Ryoko, 4,620,872, Cl. 75-246.000.
Furutachi, Nobuo: *See*—
Sato, Tadahisa; Kawagishi, Toshio; and Furutachi, Nobuo, 4,621,046, Cl. 430-381.000.
Gabella, Francois; Graf, Raymond J.; and Koors, Carl W., to Cincinnati Incorporated. Deflection compensating assembly for fabricating machine tools. 4,620,435, Cl. 72-389.000.
Gagliani, John: *See*—
Long, John V.; and Gagliani, John, 4,621,015, Cl. 428-317.700.
Galkiewicz, Thomas M.: *See*—
Booth, William O., Jr.; Galkiewicz, Thomas M.; and Forehand, Stanley L., 4,620,874, Cl. 106-21.000.
Game Concepts, Inc.: *See*—
Palladino, John R., Jr., 4,620,709, Cl. 273-264.000.
Ganguli, Partha S., to HRI, Inc. Continuous process for catalyst regeneration by staged burnoff of carbon and sulfur compounds. 4,621,069, Cl. 502-45.000.
Gann Mess- U. Regeltechnik GmbH: *See*—
Hirth, Friedrich, 4,621,229, Cl. 324-65.00R.
Ganon, Michael H., to R. G. Barry Corporation. Machine and method for stitching a slipper upper to an outsole. 4,620,495, Cl. 112-262.100.
Garcia, John D., to Electronic Signature Lock Corporation. Personal identification apparatus. 4,621,334, Cl. 364-550.000.
Garfield, Nathaniel H.: *See*—
McSherry, Thomas W., 4,620,665, Cl. 229-43.000.
Garschke, Adelheid; Tiller, Hans-Jurgen; Gobel, Roland; Magnus, Brigitte; and Oppawsky, Steffen, to Kulzer & Co. GmbH. Flame hydrolysis coating apparatus particularly for dental prostheses. 4,620,988, Cl. 427-223.000.
Garthoff, Bernward: *See*—
Meyer, Horst; Wehinger, Egbert; Garthoff, Bernward; and Kazda, Stanislav, 4,621,082, Cl. 514-212.000.
Gasser, Robert A., Jr.: *See*—
Yau, Leopoldo D.; Gasser, Robert A., Jr.; Week, Kenneth R., Jr.; Yu, Jick M.; and Chin, David D., 4,620,986, Cl. 427-93.000.
Gatschmann, Klaus: *See*—
Ruppert, Heinrich W.; and Gatschmann, Klaus, 4,620,551, Cl. 131-75.000.
Gatti, John E.; Martin, Tammy C.; Hall, Jack P.; and Fogg, Peter M., to Motorola Computer Systems, Inc. Printed wiring assembly insertion/extraction tool. 4,620,756, Cl. 339-17.00M.
Gaul, James M.: *See*—
Statton, Garry L.; and Gaul, James M., 4,621,105, Cl. 521-107.000.
Gaunt, Joseph J.; and Leek, Bobby J., to United States of America, Navy. Shipboard internal locking system. 4,620,733, Cl. 292-39.000.
Gavagan, James A., to Irvin Industries Inc. Visor detent. 4,620,742, Cl. 296-97.00K.
Gavasto, Thomas M.: *See*—
Tarcy, Gary P.; Gavasto, Thomas M.; and Ray, Siba P., 4,620,905, Cl. 204-64.00R.
Gavrilovic, Momcilo: *See*—
Roberge, Gerald; Gavrilovic, Momcilo; and Felletier, Pierre, 4,621,198, Cl. 307-82.000.
Gazzarrini, Vinicio, to Solis S.r.l. Method and apparatus for automatically positioning tubular pantyhose legs. 4,620,650, Cl. 223-43.000.
Gearhart Industries, Inc.: *See*—
Terrell, Jamie B.; and Pratt, Donna K., 4,620,591, Cl. 166-63.000.
Gebruder Netzsch Maschinenfabrik GmbH & Co.: *See*—
Canepa, Giacomo; and Ott, Klaus, 4,620,673, Cl. 241-69.000.
Gee, Ronald P., to Dow Corning Corporation. Method of preparing polyorganosiloxane emulsions having small particle size. 4,620,878, Cl. 106-287.150.
Geiger, Rolf: *See*—
Friedrich, Axel; Konig, Wolfgang; Teetz, Volker; Geiger, Rolf; and Sandow, Jurgen K., 4,621,073, Cl. 514-11.000.
Gemignani, Francois: *See*—
Gery, Alain; Chantot, Hubert; and Gemignani, Francois, 4,620,566, Cl. 137-613.000.
Genco, Joseph M.: *See*—
Rosenberg, Harvey S.; and Genco, Joseph M., 4,620,856, Cl. 55-73.000.
Gendron, Michel: *See*—
Thomson, Hugh; and Gendron, Michel, 4,620,505, Cl. 119-51.110.
Genentech, Inc.: *See*—
Builder, Stuart E.; and Ogez, John R., 4,620,948, Cl. 530-419.000.
General Electric Company: *See*—
Haque, Sazzadul; and Schroeder, Terry A., 4,620,822, Cl. 408-224.000.
Hedges, Charles V.; and Mark, Victor, 4,620,950, Cl. 260-505.00R.
Hodsdon, Roy F., 4,621,373, Cl. 455-89.000.
Lewis, Walter E., Jr., 4,620,344, Cl. 16-337.000.
McMillen, Charles J., 4,621,298, Cl. 361-38.000.
O'Grady, Norman J., 4,620,425, Cl. 62-230.000.
Quinn, Clayton B.; and Hilakos, William, 4,621,132, Cl. 528-194.000.
Rosenquist, Niles R., 4,621,130, Cl. 528-176.000.
Torossian, Kevork A.; Heisler, Ralph T.; and Cox, Frederick E., 4,621,212, Cl. 310-260.000.
Young, John D., 4,620,444, Cl. 73-606.000.
General Foods Corporation: *See*—
Donnelly, Grace M., 4,620,726, Cl. 282-1.00R.
General Kinematics: *See*—
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General Kinetics Inc.: *See*—
Hill, James D., 4,621,299, Cl. 361-151.000.
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Beer, Arthur G., 4,620,641, Cl. 220-288.000.
Daum, Ronald E., 4,621,305, Cl. 361-398.000.
Hess, Edward C.; and Anglewicz, Charles J., 4,620,354, Cl. 29-417.000.
Jacobs, William G., 4,620,745, Cl. 296-198.000.
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General Research, Inc.: *See*—
Black, James A.; and Munson, Gregory J., 4,620,787, Cl. 355-76.000.
Gennari, Federico, to Bioresearch S.p.A. Process for producing stable sulpho-adenosyl-L-methionine salts. 4,621,056, Cl. 435-85.000.
Gercken, Richard H. Drywall knife. 4,620,369, Cl. 30-329.000.
Gerhart, Fritz: *See*—
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Gertzman, Arthur A.; and Thompson, Darrell R., to Ethicon, Inc. Annealed polydioxanone surgical device having a resilient portion and an interlocking portion and method for producing the same. 4,620,541, Cl. 128-326.000.

Gervay, Joseph E., to Du Pont de Nemours, E. I., and Company. Storage stable photopolymerizable composition. 4,621,043, Cl. 430-281.000.

Gery, Alain; Chantot, Hubert; and Gemignani, Francois, to Electricite de France (S.N.); and Societe d'Exploitation de Brevets pour l'Industrie et la Marine. Device for protecting a container containing a pressurized fluid. 4,620,566, Cl. 137-613.000.

Geven, Andreas S. G.: *See—*
Liebe, Johan; Geven, Andreas S. G.; Driessen, Antonius J. G. C.; and deBie, Jan R., 4,621,216, Cl. 313-613.000.

Gibbs, Ronald E.: *See—*
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Gielow, Robert L.; and Paul, James C., to Pullman Standard. Aerodynamically structured railway car. 4,620,487, Cl. 105-2.00R.

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Easter, William M.; Gifford, Eric; Wehrmann, Rick S.; and Liebhart, Dana, 4,620,888, Cl. 156-64.000.

Giger, Kurt, to Wild Heerbrugg, AG. Apparatus for measuring pulse signal delay interval. 4,620,788, Cl. 356-5.000.

Gilbreath, William E., to Builders Equipment and Tool Manufacturing Company. Rolling scaffolding base. 4,620,608, Cl. 182-17.000.

Gill, Beresford R.: *See—*
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Gilson Brothers: *See—*
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Gjertsen, Robert K.: *See—*
Wilson, John F.; Gjertsen, Robert K.; and Shallenberger, John M., 4,620,960, Cl. 376-446.000.

Gladding, Alfred E.; and Musil, Edward C., to Flexible Steel Lacing Company. Driver for riveting fasteners to a belt. 4,620,657, Cl. 227-147.000.

Glashagel, Barry B.: *See—*
Fleischer, Glen R.; Glashagel, Barry B.; Harke, Elwood W.; Sokolowski, Robert C.; and Fay, James E., 4,621,011, Cl. 428-221.000.

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Glasstite, Inc.: *See—*
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Glaxo Group Limited: *See—*
O'Callaghan, Cynthia H.; Ayres, Barry E.; Livermore, David G. H.; Newall, Christopher E.; and Weir, Niall G., 4,621,081, Cl. 514-206.000.

Gloss, Erwin; Lotterbach, Gerhard; Perenthaler, Egbert; Schenk, Manfred; van Woudenberg, Jan F.; and Zucker, Udo, to Robert Bosch GmbH. Device for reducing drive slip of motor vehicles provided with turbo charged engines. 4,620,420, Cl. 60-602.000.

Gobel, Roland: *See—*
Garschke, Adelheid; Tiller, Hans-Jurgen; Gobel, Roland; Magnus, Brigitte; and Oppawsky, Steffen, 4,620,988, Cl. 427-223.000.

Goetter, Erwin H., to Preformed Line Products Company. Fastener strips for splice cases. 4,620,815, Cl. 403-405.100.

Goldberg, Edward M.; and Bazell, Seymour. Apparatus and method for introducing fluid into and removing fluid from a living subject. 4,620,846, Cl. 604-28.000.

Goldman, Jerome; Goldman, Marvin; Phillips, Gerald; Goldman, Terry; and Judy, John, to Penn Plax Plastics, Inc. Aquarium corner filter. 4,620,924, Cl. 210-169.000.

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Goldman, Jerome; Goldman, Marvin; Phillips, Gerald; Goldman, Terry; and Judy, John, 4,620,924, Cl. 210-169.000.

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Gomberg, Henry J., to Texas Gas Development Corporation. Low temperature radio-chemical energy conversion processes. 4,620,907, Cl. 204-157.440.

Gonzales Barrera, Roberto: *See—*
Rubio, Manuel J.; and de la Vega, Alberto, 4,620,826, Cl. 414-73.000.

Gonzales, Frank, Jr. Socket set. 4,620,460, Cl. 81-124.400.

Good, John C., to Haysom, Robert Henry; and Lindsey, David James. Safety rail means for ladders. 4,620,611, Cl. 182-106.000.

Goodale, David B., to Micromedical Research and Development Company. Mold for rapid stereotaxic injections into mouse striatum. 4,620,540, Cl. 128-303.00B.

Goodburn, William H.; and Waugh, Robert E., to D. L. Auld Company, The. Circumferential groove coating method for protecting a glass bottle. 4,620,985, Cl. 427-55.000.

Goodner, Willis R., to Motorola, Inc. Pillar via process. 4,621,045, Cl. 430-311.000.

Goodrich, George W. Sight system for archery. 4,620,372, Cl. 33-265.000.

Goodyear Tire & Rubber Company, The: *See—*
Tazuma, James J., 4,621,139, Cl. 544-85.000.

Goossens, Harry J.; and Kamper, Frederic E., to Clean Rooms International. Clean room head assembly. 4,620,869, Cl. 55-385.00A.

Gordon, David L.: *See—*
Cantrell, Daniel V.; Halverstadt, Dale A.; and Gordon, David L., 4,620,557, Cl. 131-336.000.

Gordon, Eric M.: *See—*
Natarajan, Sesha I.; and Gordon, Eric M., 4,621,092, Cl. 514-343.000.

Gordon, Warren A.; Hempenius, Walter L.; and Kirkwood, James R., to Quaker Oats Company, The. Process for preparing a highly expanded oat cereal product. 4,620,981, Cl. 426-448.000.

Gore, Gordon B.; Clark, Malcolm J.; and Le Strange, John R. Suspension for electro-acoustical transducers. 4,620,605, Cl. 181-135.000.

Goshima, Toshikazu: *See—*
Nakajima, Hiroshi; Nakane, Yoshihito; Goshima, Toshikazu; Narita, Osamu; Nishizawa, Akira; and Suzuki, Fuminari, 4,621,007, Cl. 428-206.000.

Goto, Daisaku; Sugimoto, Hikoharu; and Kato, Nobuyuki, to NGK Insulators, Ltd. Method of releasing an inner mold from a rubbery elastic molding. 4,620,959, Cl. 264-335.000.

Gotou, Mineo; and Sano, Shunichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of forming by projection an integrated circuit pattern on a semiconductor wafer. 4,621,371, Cl. 378-34.000.

Gott, Erich, to Wasserverband Raumschaft Lahr. Process for reducing the hydrogen sulfide content in anaerobic decomposition processes, especially in sludge digestion processes. 4,620,928, Cl. 210-603.000.

Goyne, Thomas S. Bearing and grease seal structure. 4,620,804, Cl. 384-275.000.

Gradl, Reinhard: *See—*
Schimmel, Gunther; Ressel, Herbert; Heymer, Gero; and Gradl, Reinhard, 4,620,966, Cl. 423-185.000.

Graf, Raymond J.: *See—*
Gabella, Francois; Graf, Raymond J.; and Koors, Carl W., 4,620,435, Cl. 72-389.000.

Graham, Donell I. Device for turning fabric sleeves. 4,620,649, Cl. 223-40.000.

Graham, Emmett: *See—*
Wertz, Keith J.; and Graham, Emmett, 4,620,642, Cl. 220-307.000.

Granger, Donald W.: *See—*
Faul, Donald; Broussard, Paul P.; and Granger, Donald W., 4,620,439, Cl. 73-40.700.

Grass, Alfred. Three way adjustable door hinge having cooperating wedge surfaces. 4,620,343, Cl. 16-236.000.

Grasser, Katalin: *See—*
Budai, Zoltan; Mezei, Tibor; Lay nee Konya, Aranka; Petocz, Lujza; Grasser, Katalin; and Orr, Zsuzsanna, 4,621,101, Cl. 514-640.000.

Grawe, Franz-Eugen; Grimm, Manfred; Schneppendahl, Richard; and Hasemann, Fred, to Trilux-Lenze GmbH + Co. KG. Elongated luminaire. 4,621,309, Cl. 362-342.000.

Great Lakes Chemical Corporation: *See—*
Cole, Leon M., 4,621,096, Cl. 514-389.000.

Great Plains Ventures, Inc.: *See—*
Greenlee, Fred S., 4,620,628, Cl. 198-790.000.

Greene, Charles W.; and Hosmer, Christopher E., to Marshall and Williams Company. Tenter chain. 4,620,844, Cl. 474-91.000.

Greenhouse, Walter V. V.: *See—*
Fracalossi, Roland N.; Greenhouse, Walter V. V.; and Sollers, Joseph S., 4,621,106, Cl. 521-130.000.

Greenhut, Paul M. Exercise apparatus. 4,620,703, Cl. 272-129.000.

Greenlee, Fred S., to Great Plains Ventures, Inc. Cable drive conveyor system and a method for conveying articles in a conveyor system. 4,620,628, Cl. 198-790.000.

Grega nee Toth, Erzsebet; Koppany, Eniko ; Bodi, Tibor; Nagy, Jozsef; Dombay, Zsolt; Szarvas, Tibor; Horvath, Laszlo ; Szabo nee Muranyi, Ildiko ; Marton, Jozsef; Pozsar, Bela, Jr.; Viranyi, Sandor; Simon, Peter; Keseru, Jozsef; and Eifert, Jozsef, to Eszakmagyarorszagivegyimuvek. Composition for increasing plant productivity protein nitrogen level and anion uptake, possessing kinetin-supplementing, cytokinin-like and membrane activities. 4,620,871, Cl. 71-92.000.

Grega nee Toth, Erzsebet: *See—*
Dombay, Zsolt; Grega nee Toth, Erzsebet; Nagy, Jozsef; Pavlicsak, Csaba; Tasi, Laszlo ; Toth, Andras; Toth, Oszkar; Vitanyi, Judit; Bihari, Ferenc; Bohus, Peter; Inczedy, Peter; Magyari, Istvan; Kertesz nee Szabo, Marianna; Wohl, Laszlo ; and Ferenczi, Attila, 4,621,080, Cl. 514-187.000.

Griffith, David S.: *See—*
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Griffiths, Arthur, to Pilkington Brothers P.L.C. Apparatus for collecting material which becomes dislodged from the underside of a continuous belt conveyor. 4,620,627, Cl. 198-580.000.

Grimm, Manfred: *See—*
Grawe, Franz-Eugen; Grimm, Manfred; Schneppendahl, Richard; and Hasemann, Fred, 4,621,309, Cl. 362-342.000.

Grimsby, F. Norman, to Shell Oil Company. Process for the production of dichlorohydrins. 4,620,910, Cl. 204-182.400.

Grimsby, F. Norman; and Blytas, George C., to Shell Oil Company. Process for the production of dichlorohydrin. 4,620,912, Cl. 204-182.400.

Grimsby, F. Norman: *See—*
Blytas, George C.; Foster, E. Gordon; and Grimsby, F. Norman, 4,620,911, Cl. 204-182.400.

Groenendijk, Herman: *See—*
Kohaut, Gunter; Weber, Werner; Groenendijk, Herman; Poppelaars, Adrianus C.; and Janssen, Wilhelmus H. J., 4,621,022, Cl. 428-397.000.

Groezinger, John J.; and Anders, Gene A., to Caterpillar Inc. Tire cooling by fluid transfer element. 4,620,580, Cl. 152-153.000.

Gronau, Jurgen: *See—*
Gronau, Paul; and Gronau, Jurgen, 4,620,486, Cl. 104-121.000.

Gronau, Paul; and Gronau, Jurgen, to Kottgen GmbH & Co. Kommanditgesellschaft. Rail-guard transportation system. 4,620,486, Cl. 104-121.000.

Gross, Jerome A.: *See*—
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Gruner, Heiko: *See*—
Burger, Kurt; and Gruner, Heiko, 4,620,365, Cl. 29-610.0SG.

Grunwald, Werner: *See*—
Reum, Helmut; Frey, Thomas; Grunwald, Werner; Imhof, Ernst; Komaroff, Iwan; Schmid, Gunther; and Schmid, Kurt, 4,620,516, Cl. 123-275.000.

GTE Communication Systems Corporation: *See*—
Jones, Leo V., Jr.; and Walsh, A. Lee, 4,621,354, Cl. 370-13.000.
On, Kevin Q., 4,621,370, Cl. 377-106.000.

GTE Products Corporation: *See*—
Morris, Merle; Meade, Steven L.; and Senft, Stephen P., 4,621,220, Cl. 313-318.000.

Guala, Bernard: *See*—
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Guidoux, Loic B. Y., to Telecommunications Radioelectriques et Telephoniques T.R.T. Method of reducing the convergence time of an echo canceller and apparatus for carrying out said method. 4,621,173, Cl. 370-32.100.

Guilbert, Curtis R.; and Fialla, Peter, to Minnesota Mining and Manufacturing Company. High-temperature resistant electrically insulating coating powder. 4,621,122, Cl. 525-422.000.

Gunning Medical Products, Inc.: *See*—
Hartley, Alvin W., Sr., 4,620,536, Cl. 128-200.240.

Gurian, Marshall I.; and Pender, Don P., to Advanced Systems Incorporated. Apparatus for processing circuit board substrate. 4,620,894, Cl. 156-345.000.

Gust, Ian D.: *See*—
Daemer, Richard J.; Feinstone, Stephen M.; Gust, Ian D.; and Purcell, Robert H., 4,620,978, Cl. 424-89.000.

Gustafson, Bengt G., to U. S. Philips Corporation. Method of and a system for remote control of electronic equipments. 4,621,262, Cl. 340-825.690.

Gustin, Michael J.: *See*—
Theall, C. Earle, Jr.; Ludwig, Hans G.; and Gustin, Michael J., 4,621,242, Cl. 333-17.00M.

Guttinger, Heinz, to Sulzer-Escher Wyss Aktiengesellschaft. Controlled deflection roll. 4,620,348, Cl. 29-116.0AD.

Guyon, James G.: *See*—
Brady, Robert T.; and Guyon, James G., 4,620,490, Cl. 110-173.00R.

Haagensen, Duane B. Oil recovery system and method. 4,620,593, Cl. 166-248.000.

Haco-Rollen-Vertrieb GmbH & Co. KG: *See*—
Haussels, Berthold, 4,620,342, Cl. 16-18.00R.

Haden Schweitzer Corporation: *See*—
Bradshaw, Norman F.; and Bloomer, Ivan, 4,620,858, Cl. 55-222.000.

Haga, Takahiro: *See*—
Kimura, Fumio; Haga, Takahiro; Maeda, Kazuyuki; Hayashi, Kouji; Seki, Toshio; and Yoshida, Tsunezo, 4,620,868, Cl. 71-90.000.

Hagino, Hideo: *See*—
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Hahnke, Manfred: *See*—
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Halbach, Klaus, to Field Effects, Inc. Cylindrical electromagnet for an NMR imaging system. 4,621,236, Cl. 324-319.000.

Hale, Jordan C., to Aeroil Products Company, Inc. Portable asphalt melting and dispensing apparatus. 4,620,645, Cl. 222-146.200.

Hall, Jack P.: *See*—
Gatti, John E.; Martin, Tammy C.; Hall, Jack P.; and Fogg, Peter M., 4,620,756, Cl. 339-17.00M.

Hall, Wilbur L., to Texaco Inc. Vertical conformance steam drive oil recovery method. 4,620,594, Cl. 166-263.000.

Halverstadt, Dale A.: *See*—
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Hamai, Tsuneo: *See*—
Suganuma, Kazuo; and Hamai, Tsuneo, 4,621,207, Cl. 307-451.000.

Hamer, Edward A. G., to Celanese Corporation. Process for preparing microporous polyethylene film by uniaxial cold and hot stretching. 4,620,956, Cl. 264-145.000.

Hanemaayer, Jacobus N., to Hanmar Home Equipment Limited. Combination table support and trunk access system for a recreational vehicle. 4,620,741, Cl. 296-37.140.

Hanlon, William S., to Design Inceptions, Inc. Threaded spool storage container apparatus and method. 4,620,652, Cl. 223-107.000.

Hanmar Home Equipment Limited: *See*—
Hanemaayer, Jacobus N., 4,620,741, Cl. 296-37.140.

Hans Grohe GmbH & Co. KG: *See*—
von Glanstatten, Thassilo A. F.; and Stahl, Eugen H., 4,620,569, Cl. 138-132.000.

Hansen, James G.: *See*—
Herr, Francis V.; Walklet, Thomas B.; Hansen, James G.; Hasler, Theodore J.; Beil, Valentin; Donlon, Harold E.; and Christian, Ken E., 4,620,636, Cl. 211-126.000.

Hansen, Ove E., to A/S Niro Atomizer. Process for preparing polymer particles. 4,621,068, Cl. 502-8.000.

Hanson, Mark B.: *See*—
Bluish, Joseph A.; and Hanson, Mark B., 4,621,335, Cl. 364-550.000.

Hanstine, Kenneth W.; Lukacz, Stephen A.; and Nelson, Jeffrey N., to Fuller Company. Pneumatic actuated roller assembly for a roller mill. 4,620,674, Cl. 241-121.000.

Hanyu, Susumu, to Janome Sewing Machine Co., Ltd. Pattern selecting device of an electronic control sewing machine. 4,620,496, Cl. 112-445.000.

Hanyu, Susumu; Takenoya, Hideaki; and Saiki, Kazuyuki, to Janome Sewing Machine Co. Ltd. Sound proof device of a printer. 4,620,810, Cl. 400-689.000.

Happach, Anton, to Schaltbau GmbH. Housing for circuit breaker. 4,621,247, Cl. 335-202.000.

Haque, Sazzadul; and Schroeder, Terry A., to General Electric Company. Flat bottom hole drill. 4,620,822, Cl. 408-224.000.

Harada Kogyo Kabushiki Kaisha: *See*—
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Harada, Takuji, to Harada Kogyo Kabushiki Kaisha. Transmission channel coupler for antenna. 4,621,243, Cl. 333-24.00R.

Hare, Larry L. Method and apparatus for gripping a fish. 4,620,386, Cl. 43-4.000.

Hargarten, James W.: *See*—
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Harke, Elwood W.: *See*—
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Harold Simpson, Inc.: *See*—
Simpson, Harold G.; and Neyer, Leo E., 4,620,397, Cl. 52-66.000.

Harrel, Robert D., to Tellin, Incorporated. Guide for rotating sucker rods. 4,620,802, Cl. 384-53.000.

Harreus, Albrecht: *See*—
Casals-Stenzel, Jorge; Weber, Karl-Heinz; Walther, Gerhard; Harreus, Albrecht; and Muacevic, Gojko, 4,621,083, Cl. 514-220.000.

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Hartley, Alvin W., Sr., to Gunning Medical Products, Inc. Modular tray assembly for a respiratory apparatus. 4,620,536, Cl. 128-200.240.

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Hasemann, Fred: *See*—
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Hashida, Takashi: *See*—
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Hashimoto, Hiroshi: *See*—
Okita, Tsutomu; Tsuji, Nobuo; Mukaida, Yoshito; Hashimoto, Hiroshi; Nakagawa, Teruo; Hashimoto, Akiyoshi; and Ogasawara, Takahisa, deceased, 4,621,027, Cl. 428-425.900.

Hashimoto, Masaru, to Kabushiki Kaisha Toshiba. Level detector. 4,621,206, Cl. 307-350.000.

Hashimoto, Takeo: *See*—
Narabu, Tadakuni; Hashimoto, Takeo; Kanbe, Hideo; Sato, Maki; and Nakashio, Miaki, 4,621,369, Cl. 377-60.000.

Hasler, Theodore J.: *See*—
Herr, Francis V.; Walklet, Thomas B.; Hansen, James G.; Hasler, Theodore J.; Beil, Valentin; Donlon, Harold E.; and Christian, Ken E., 4,620,636, Cl. 211-126.000.

Hasquenoph, Jean, deceased (by Hasquenoph, Simone, legal representative); and Coutin, Pierre F., to R. Alkan & Cie. Device for carrying and ejecting under aircraft loads, comprising support arms positioned with respect to the diameter of the loads. 4,620,680, Cl. 244-137.00A.

Hasquenoph, Simone, legal representative: *See*—
Hasquenoph, Jean, deceased; and Coutin, Pierre F., 4,620,680, Cl. 244-137.00A.

Hasselbrack, Robert, to Accupap, Inc. Pap smear T-zone sampler. 4,620,548, Cl. 128-758.000.

Hatano, Sakae: *See*—
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Hatch, Randolph T., to Biotechnica International, Inc. Purification and recovery of amino acids. 4,621,153, Cl. 562-443.000.

Hatfield, Carl T. Visored cap and method for making same. 4,620,325, Cl. 2-192.000.

Hattori, Takeshi: *See*—
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Hauni-Werke Korber & Co. KG.: *See*—
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Haussels, Berthold, to Haco-Rollen-Vertrieb GmbH & Co. KG. Method of manufacturing swivel bearing for swivel casters and swivel bearings manufactured accordingly. 4,620,342, Cl. 16-18.00R.

Hautdidier, Jerome: *See*—
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Hayashi, Kouji: *See*—
Kimura, Fumio; Haga, Takahiro; Maeda, Kazuyuki; Hayashi, Kouji; Seki, Toshio; and Yoshida, Tsunezo, 4,620,868, Cl. 71-90.000.

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Hazel, Robert L.; and Chan, Gilbert Y., to Burroughs Corporation. Optical memory system providing improved focusing control and improved beam combining and separating apparatus. 4,621,353, Cl. 369-112.000.

Heath, James E., to Samuel Strapping Systems Ltd. Heat treat process and furnace. 4,620,884, Cl. 148-128.000.

Hedges, Charles V.; and Mark, Victor, to General Electric Company. Process for preparing aryl sulfone sulfonic acids. 4,620,950, Cl. 260-505.00R.

Hehlen, Robert; and Marcenac, Philippe, to Thomson-CSF. System for making a thermo-active device temperature dependent. 4,621,261, Cl. 340-825.520.

Heidner, Richard C.: *See*—
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Heilos, Johannes: *See*—
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Heinerman, Jacobus J. L.: *See*—
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Heinrich, Theodore M.; and Frost, Lawrence W., to Westinghouse Electric Corp. Toroidal sensor coil and method. 4,621,231, Cl. 324-142.000.

Heintzmann, Peter; Koppers, Manfred; Bohnes, Karlheinz; and Kunzer, Heinz, to Bochumer Eisenhutte Heintzmann GmbH & Co. KG. Method of and arrangement for loosening, loading and transporting of stratified minerals in underground elongated front longwalls. 4,620,748, Cl. 299-18.000.

Heisler, Ralph T.: *See*—
Torossian, Kevork A.; Heisler, Ralph T.; and Cox, Frederick E., 4,621,212, Cl. 310-260.000.

Heiter, George L., to AT&T Bell Laboratories. Broadband variable attenuator using transmission lines series coupled by adjustable pin diodes. 4,621,244, Cl. 333-81.00A.

Hemmeter, George T. Modified garden swing with stabilizer. 4,620,702, Cl. 272-85.000.

Hempenius, Walter L.: *See*—
Gordon, Warren A.; Hempenius, Walter L.; and Kirkwood, James R., 4,620,981, Cl. 426-448.000.

Henderson, Robert M.; and Zechlin, Richard, to Colt Industries Operating Corp. Modular, programmable high energy ignition system. 4,620,521, Cl. 123-599.000.

Hendrickson, David L., to Custom Engineering & Mfg. Co. Liquid level control. 4,620,441, Cl. 73-327.000.

Henry, Patrick F.: *See*—
Padgett, Ray T., 4,620,694, Cl. 267-64.150.

Hensley, Albert L., Jr.: *See*—
Tait, A. Martin; Nevitt, Thomas D.; and Hensley, Albert L., Jr., 4,620,922, Cl. 208-254.00H.

Heppenstall, R. Bruce; and Shenton, David W., to Richards Medical Company. Enhanced fracture healing and muscle exercise through defined cycles of electric stimulation. 4,620,543, Cl. 128-419.00F.

Herbert L. Engineering Corp.: *See*—
McClay, Archie R.; Billington, Raymond H.; and Ruckman, Chester W., 4,620,656, Cl. 227-5.000.

Herd, Karl-Josef: *See*—
Jager, Horst; Langheinrich, Klaus; and Herd, Karl-Josef, 4,621,138, Cl. 544-76.000.

Hermach, Carl J., to Publishers Equipment Corporation. Conversion of letterpress to offset printing. 4,620,480, Cl. 101-179.000.

Herr, Francis V.; Walklet, Thomas B.; Hansen, James G.; Hasler, Theodore J.; Beil, Valentin; Donlon, Harold E.; and Christian, Ken E., to McDonald Products Corporation. Office accessory system for use on both horizontal and vertical surfaces. 4,620,636, Cl. 211-126.000.

Hersh, Marvin; and Lentine, Charles W., to American Home Products Corporation. Pharmaceutical composition containing a liquid lubricant. 4,620,974, Cl. 424-37.000.

Herve, Jacques M., to Ecole Centrale Des Arts et Manufactures. Device for counter-balancing the forces due to gravity in a robot arm. 4,620,829, Cl. 414-720.000.

Hess, Edward C.; and Anglewicz, Charles J., to General Motors Corporation. Method of applying weatherstrip to a vehicle body opening. 4,620,354, Cl. 29-417.000.

Hettche, Albert: *See*—
Lechtken, Peter; Trauth, Hubert; Weiss, Stefan; and Hettche, Albert, 4,621,109, Cl. 524-83.000.

Hewlett-Packard Company: *See*—
Anderson, Dean A., 4,621,273, Cl. 346-140.00R.
Miller, Brian M., 4,621,205, Cl. 307-320.000.

Heydner, Konrad, to Ellenberger & Poensgen GmbH. Door-bolting device for electrical appliances. 4,620,735, Cl. 292-144.000.

Heymer, Gero: *See*—
Schimmel, Gunther; Ressel, Herbert; Heymer, Gero; and Gradl, Reinhard, 4,620,966, Cl. 423-185.000.

Higashi, Toshihiko: *See*—
Nishikawa, Mitsuyo; Kurihara, Nobuo; Sato, Yoshio; Watanabe, Atsumi; Higashi, Toshihiko; Miyagaki, Hisanori; Yokogawa, Atsushi; and Shimada, Yoshihiro, 4,620,491, Cl. 110-185.000.

Higginbotham, Richard H., Jr.: *See*—
Higginbotham, Richard H., Sr.; and Higginbotham, Richard H., Jr., 4,620,843, Cl. 446-94.000.

Higginbotham, Richard H., Sr.; and Higginbotham, Richard H., Jr. Child's construction toy. 4,620,843, Cl. 446-94.000.

Higgins, William A., to Lubrizol Corp., The. Amino sulfonic acid derivatives of carboxylic acid-containing interpolymers, and fuels, lubricants and aqueous systems containing said derivatives. 4,620,855, Cl. 44-62.000.

High, Wanda B.: *See*—
Lund, John E.; and High, Wanda B., 4,621,100, Cl. 514-573.000.

Hijikata, Kenichi; Sato, Katsuyuki; Maruyama, Hitoshi; and Furuhashi, Ryoko, to Mitsubishi Kinzoku Kabushiki Kaisha. Composite target material and process for producing the same. 4,620,872, Cl. 75-246.000.

Hijiya, Hiromi: *See*—
Miyake, Toshio; Hijiya, Hiromi; Suzuki, Shinji; and Matsumoto, Teruo, 4,621,137, Cl. 536-5.000.

Hilakos, William: *See*—
Quinn, Clayton B.; and Hilakos, William, 4,621,132, Cl. 528-194.000.

Hilge, Bernhard; Kramer, Carl; and Knoch, Martin, to Swiss Aluminium Ltd. Furnace for heating up cylindrical charges. 4,620,840, Cl. 432-121.000.

Hill, James D., to General Kinetics Inc. High energy degausser. 4,621,299, Cl. 361-151.000.

Hillestad, Tollief O. Portable tube milling tool. 4,620,823, Cl. 409-178.000.

Hilti Aktiengesellschaft: *See*—
Hugel, Robert; Kolb, Sven; and Leibhard, Erich, 4,620,406, Cl. 52-704.000.

Himeno, Kiyoshi: *See*—
Imahori, Seiichi; Himeno, Kiyoshi; and Maeda, Shuichi, 4,621,136, Cl. 534-761.000.

Hinzmann, Alfred, to Hauni-Werke Korber & Co. KG. Method and apparatus for making and manipulating streams of fibrous material. 4,620,552, Cl. 131-84.300.

Hirabayashi, Hisaaki; Sugimoto, Koichi; Arai, Shinichi; Masui, Tomoyuki; and Inaba, Hidetoshi, to Hitachi, Ltd. Method and apparatus for calibrating transformation matrix of force sensor. 4,620,436, Cl. 73-1.00B.

Hirabayashi, Hisaaki: *See*—
Sugimoto, Koichi; Hirabayashi, Hisaaki; Arai, Shinichi; and Sakaue, Shiyuki, 4,621,332, Cl. 364-513.000.

Hirai, Kenji; Fuchikami, Takamasa; Hirose, Hiroaki; and Ojima, Iwao, to Sagami Chemical Research Center. Catalyst and method for isomerization. 4,621,150, Cl. 560-51.000.

Hirakawa, Shuji: *See*—
Shinohara, Nobutaka; Minami, Akihiro; and Hirakawa, Shuji, 4,621,280, Cl. 358-22.000.

Hirao, Yoshiaki; Kuga, Ryuichiro; and Nagaoka, Yoshitomi, to Matsushita Electric Industrial Co., Ltd. Automatic focusing device for a video camera. 4,621,292, Cl. 358-227.000.

Hirata, Akira; Nagayama, Hajime; Watanabe, Akinori; Nitta, Kouji; and Shimaji, Kenji, to Waseda University; and Onoda Cement Company, Ltd. Three phase fluidized bed water purifying process. 4,620,931, Cl. 210-617.000.

Hirosaki, Botaro; and Aoyagi, Hidehito, to NEC Corporation. Method of synchronizing parallel channels of orthogonally multiplexed parallel data transmission system and improved automatic equalizer for use in such a transmission system. 4,621,355, Cl. 370-19.000.

Hirosawa, Kouichiro: *See*—
Mitsui, Tsutomu; Kobayashi, Hideyuki; and Hirosawa, Kouichiro, 4,620,624, Cl. 192-0.076.

Hirose, Hiroaki: *See*—
Hirai, Kenji; Fuchikami, Takamasa; Hirose, Hiroaki; and Ojima, Iwao, 4,621,150, Cl. 560-51.000.

Hirose, Tsuneo: *See*—
Suzuki, Naoyoshi; Hirose, Tsuneo; and Osaki, Humio, 4,621,054, Cl. 435-69.000.

Hirth, Friedrich, to Gann Mess- U. Regeltechnik GmbH. Instrument for measuring the moisture content of solids. 4,621,229, Cl. 324-65.00R.

Hishiyama, Sadao: *See*—
Uesaka, Yasutaro; Fujiwara, Hideo; Hishiyama, Sadao; and Shiiki, Kazuo, 4,621,030, Cl. 428-607.000.

Hitachi Koki Company, Limited: *See*—
Fujieda, Toshiaki; and Kubo, Kazuyuki, 4,621,343, Cl. 364-900.000.
Tatsuno, Kimio; Kataoka, Keiji; Homma, Yoshifumi; and Ono, Yoshifumi, 4,620,768, Cl. 350-6.800.

Hitachi, Ltd.: *See*—
Fujita, Yasuhiro, 4,620,655, Cl. 226-109.000.
Fukuda, Kyohei, 4,620,773, Cl. 350-432.000.
Hirabayashi, Hisaaki; Sugimoto, Koichi; Arai, Shinichi; Masui, Tomoyuki; and Inaba, Hidetoshi, 4,620,436, Cl. 73-1.00B.
Ito, Takashi, 4,621,314, Cl. 363-54.000.
Kudo, Toichi; Abe, Takasi; and Ogawa, Seiichiro, 4,621,317, Cl. 364-147.000.
Mochida, Hideyuki, 4,620,763, Cl. 339-94.00R.
Nishikawa, Mitsuyo; Kurihara, Nobuo; Sato, Yoshio; Watanabe, Atsumi; Higashi, Toshihiko; Miyagaki, Hisanori; Yokogawa, Atsushi; and Shimada, Yoshihiro, 4,620,491, Cl. 110-185.000.
Odashima, Hitoshi; Sasaki, Hideaki; Kazui, Shinichi; Shiono, Shigeo; Isshiki, Osamu; and Kawana, Takeshi, 4,620,663, Cl. 228-44.700.
Sato, Toshihiro; Suzuki, Ryo; Ikeda, Tadashi; Takeuchi, Teruaki; and Sugita, Yutaka, 4,621,344, Cl. 365-36.000.
Seki, Hideo, 4,620,452, Cl. 73-864.210.

Sugimoto, Koichi; Hirabayashi, Hisaaki; Arai, Shinichi; and Sakaue, Shiyuki, 4,621,332, Cl. 364-513.000.
Takemoto, Iwao; Ohba, Shinya; Aoki, Masakazu; Ando, Haruhisa; Nakai, Masaaki; Ozaki, Toshifumi; and Imaide, Takuya, 4,621,291, Cl. 358-213.000.
Tatsuno, Kimio; Kataoka, Keiji; Homma, Yoshifumi; and Ono, Yoshifumi, 4,620,768, Cl. 350-6.800.
Tsuchihasi, Akira; Takahashi, Ichirou; and Miyake, Norihisa, 4,620,830, Cl. 414-735.000.
Uesaka, Yasutaro; Fujiwara, Hideo; Hishiyama, Sadao; and Shiiki, Kazuo, 4,621,030, Cl. 428-607.000.
Ushiro, Yasunori; Nagashima, Shigeo; and Kawabe, Shun, 4,621,324, Cl. 364-200.000.
Watabe, Mitsuru; Morinaga, Shigeki; Sugiura, Yasuyuki; and Takahashi, Tadashi, 4,621,224, Cl. 318-594.000.
Yoshida, Minoru; Yamada, Hiromichi; Uchida, Yoko; Kohno, Hideki; and Takagi, Hiroshi, 4,621,194, Cl. 250-367.000.

Hitachi Maxell, Ltd.: *See*—
Uesaka, Yasutaro; Fujiwara, Hideo; Hishiyama, Sadao; and Shiiki, Kazuo, 4,621,030, Cl. 428-607.000.

Hitachi Medical Corporation: *See*—
Yoshida, Minoru; Yamada, Hiromichi; Uchida, Yoko; Kohno, Hideki; and Takagi, Hiroshi, 4,621,194, Cl. 250-367.000.

Hitco: *See*—
Myers, Donald H.; and Lampman, James A., 4,620,890, Cl. 156-196.000.

Hobart Corporation: *See*—
Margraf, Dallas A.; and Treiber, Fritz F., 4,620,467, Cl. 83-389.000.

Hockings, Eric F.: *See*—
Bloom, Stanley; and Hockings, Eric F., 4,621,214, Cl. 313-402.000.

Hoddinott, Dudley S., to United Kingdom Atomic Energy Authority. Metal vapor deposition method and apparatus. 4,620,984, Cl. 427-9.000.

Hodsdon, Roy F., to General Electric Company. Control surface for a trunking personal radio. 4,621,373, Cl. 455-89.000.

Hoechst Aktiengesellschaft: *See*—
Friedrich, Axel; Konig, Wolfgang; Teetz, Volker; Geiger, Rolf; and Sandow, Jurgen K., 4,621,073, Cl. 514-11.000.
Kohaut, Gunter; Weber, Werner; Groenendijk, Herman; Poppelaars, Adrianus C.; and Janssen, Wilhelmus H. J., 4,621,022, Cl. 428-397.000.
Puhler, Alfred; Wohlleben, Wolfgang; and Leineweber, Michael, 4,621,061, Cl. 435-320.000.
Quack, Jochen M.; Reng, Alwin; Skrypzak, Werner; and Kunz, Walter, 4,620,976, Cl. 424-70.000.
Schimmel, Gunther; Ressel, Herbert; Heymer, Gero; and Gradl, Reinhard, 4,620,966, Cl. 423-185.000.
Tetzlaff, Karl-Heinz; Schmid, Dieter; and Russow, Jurgen, 4,620,902, Cl. 204-1.00R.
von der Eltz, Hans-Ulrich; and Oppitz, Peter, 4,620,338, Cl. 8-151.000.

Hoesch AG: *See*—
Lachmitz, Horst, 4,621,181, Cl. 219-62.000.

Hoesch Werke Aktiengesellschaft: *See*—
Kliesch, Wilfried; Koch, Friedrich O.; Wahl, Hans J.; Krebs, Rolf; Schorr, Peter; and Strauch, Heinz, 4,621,176, Cl. 219-8.500.

Hoffmann, Klaus: *See*—
Stark, Gerhard; and Hoffmann, Klaus, 4,620,347, Cl. 29-26.00A.

Hofmann, Hellmut G. Process for the removal of protein and degradation products thereof from water. 4,620,929, Cl. 210-610.000.

Hofmann, Klaus: *See*—
Tappe, Horst; Hofmann, Klaus; Hahnke, Manfred; and Bode, Albert, 4,620,853, Cl. 8-639.000.

Hohn, Fritz-Jurgen: *See*—
Chang, Tai-Hon P.; Coane, Philip J.; Hohn, Fritz-Jurgen; Molzen, Walter W., Jr.; and Zingher, Arthur R., 4,621,232, Cl. 324-158.00R.

Holdway, John B., to Pace, Incorporated. Device for attaching modular electronic components to or removing them from an insulative substrate. 4,620,659, Cl. 228-20.000.

Holik, Herbert: *See*—
Linck, Erich; Holik, Herbert; Siewert, Woflgang; and Selbherr, Anton, 4,620,926, Cl. 210-221.200.

Holland, Charlie R.: *See*—
Delpercio, Michael J.; and Holland, Charlie R., 4,620,684, Cl. 248-225.200.

Hollister, Kenneth R., to Eastman Kodak Company. Polymeric antibacterial compositions. 4,621,120, Cl. 525-327.100.

Holmberg, Rodney D.; and Bolstad, Brian K., to Holmberg, Rodney D. Tackle box with light unit assembly. 4,621,308, Cl. 362-154.000.

Holmes, Paul A., to Imperial Chemical Industries PLC. Disposable bags. 4,620,999, Cl. 428-35.000.

Holste, Daniel D.; and Reiners, Lawrence L., to Sperry Corporation. Multi-user read-ahead memory. 4,621,320, Cl. 364-200.000.

Holtrop, James S.; and Maurer, Richard P., to Monsanto Company. Thermoformable laminate structure. 4,621,013, Cl. 428-245.000.

Homma, Yoshifumi: *See*—
Tatsuno, Kimio; Kataoka, Keiji; Homma, Yoshifumi; and Ono, Yoshifumi, 4,620,768, Cl. 350-6.800.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Makino, Tomoaki; Arakawa, Masahiro; and Mitsui, Tomiyoshi, 4,620,951, Cl. 261-44.300.
Sakata, Mamoru; and Minakawa, Masaaki, 4,620,720, Cl. 280-666.000.
Takahashi, Hirotake, 4,620,715, Cl. 280-269.000.

Honeywell Inc.: *See*—
Adams, John T., 4,620,668, Cl. 236-46.00R.
Boebert, William E.; and Kain, Richard Y., 4,621,321, Cl. 364-200.000.
Doddapaneni, Narayan, 4,621,036, Cl. 429-194.000.

Honma, Ken: *See*—
Yoshimura, Tamotsu; Nakamura, Masahiko; and Honma, Ken, 4,621,129, Cl. 528-176.000.

Honshu Seishi Kabushiki Kaisha: *See*—
Sameshima, Tadanori; and Kakigi, Akito, 4,620,827, Cl. 414-114.000.

Hopkins, Ronald J.; Thomas, Evan G.; and Kieta, Harold J., to Allied Corporation. Soluble fluorinated cycloalkane sulfonate surfactant additives for NH_4F/HF oxide etchant solutions. 4,620,934, Cl. 252-79.400.

Hopkinson, Harold H.; and Iiyama, Eiichi, to Carrier Corporation. Expansion devices for a multizone heat pump system. 4,620,423, Cl. 62-77.000.

Hori, Shigekazu: *See*—
Saito, Tamio; Kobayashi, Hiroshi; and Hori, Shigekazu, 4,621,190, Cl. 235-492.000.

Horie, Hiromichi: *See*—
Ochiai, Kumi; Horie, Hiromichi; Arima, Itsuo; and Morita, Mikio, 4,620,933, Cl. 252-62.540.

Horiguchi, Michiyuki; Matsui, Yoshimitsu; and Ohashi, Masakazu, to Sharp Kabushiki Kaisha. Signal level compensation in an in-line data communication system. 4,621,367, Cl. 375-36.000.

Horikoshi, Yukio: *See*—
Sakamaki, Hiroshi; Horikoshi, Yukio; and Yanagihashi, Kikuji, 4,620,837, Cl. 418-173.000.

Horimoto, Yoshimitsu, to Luxeord Co., Ltd. Moderating agent of cigarette taste. 4,620,554, Cl. 131-270.000.

Horiuchi, Tatsuo, to Noda Institute for Scientific Research. N-acetylhexosamine oxidase and process for producing the same. 4,621,057, Cl. 435-191.000.

Horn, Laurent; Hautdidier, Jerome; and Soulet, Christian, to Compagnie Europeenne du Zirconium Cezus. Process for machining tubular parts and apparatus for carrying out the process. 4,620,463, Cl. 82-1.00C.

Horner, Albert: *See*—
Winter, Rudolf; Horner, Albert; and Lindner, Adalbert, 4,620,889, Cl. 156-166.000.

Horton, Frederick L., Jr. Process for manufacturing optically clear two-colored objects. 4,620,957, Cl. 264-247.000.

Horvath, Bela: *See*—
Ivony, Jozsef; Madocsay, Attila; Ratsko, Istvan; Horvath, Bela; and Madi, Jeno , 4,620,717, Cl. 280-432.000.

Horvath, Laszlo : *See*—
Grega nee Toth, Erzsebet; Koppany, Eniko ; Bodi, Tibor; Nagy, Jozsef; Dombay, Zsolt; Szarvas, Tibor; Horvath, Laszlo ; Szabo nee Muranyi, Ildiko ; Marton, Jozsef; Pozsar, Bela, Jr.; Viranyi, Sandor; Simon, Peter; Keseru, Jozsef; and Eifert, Jozsef, 4,620,871, Cl. 71-92.000.

Hoshiko, Henry H.: *See*—
Baer, James W.; Hoshiko, Henry H.; McIntosh, Robert P.; Reilly, Charles M.; Romano, Paul M.; and Hargarten, James W., 4,621,351, Cl. 369-44.000.

Hosmer, Christopher E.: *See*—
Greene, Charles W.; and Hosmer, Christopher E., 4,620,844, Cl. 474-91.000.

Hosokawa, Hidehiro; Iida, Yoshimichi; and Takahashi, Hisatsugu, to Nichirei Corporation. Process for the production of processed ice containing soluble additives or materials dispersed therein. 4,620,422, Cl. 62-70.000.

Hou, De-Yan, to United States of America, Health and Human Services. Indium-bleomycin complex. 4,620,971, Cl. 424-1.100.

Houswerth, John R., to Lenox Hill Brace Shop, Inc. Adjustment device for an articulated joint brace. 4,620,532, Cl. 128-80.00C.

Howery, Kenneth A. Submicronic hydrophilic filter media. 4,620,932, Cl. 210-808.000.

Howng, Wei-Yean, to Texas Instruments Incorporated. Cylinder pressure transmitter for an internal combustion engine. 4,620,438, Cl. 73-35.000.

HRI, Inc.: *See*—
Ganguli, Partha S., 4,621,069, Cl. 502-45.000.

Hsieh, Chang-Li, to Koch Engineering Company, Inc. Gas liquid contact tray and method. 4,620,952, Cl. 261-114.00R.

Hubert, Hans-Juergen; and Tillmetz, Klaus D., to Schering Aktiengesellschaft. Method for making amines. 4,621,158, Cl. 564-473.000.

Huchette, Michel: *See*—
Bodele, Gilbert; Duflot, Pierrick; Valentin, Bernard; and Huchette, Michel, 4,620,880, Cl. 127-60.000.

Huettenhain, Horst: *See*—
Leibson, Irving; and Huettenhain, Horst, 4,620,672, Cl. 241-21.000.

Huey, Larry J.: *See*—
Lin, David C. K.; Huey, Larry J.; and Kaveh, Farrokh, 4,620,859, Cl. 65-2.000.

Hufnagel, Robert E., to Perkin-Elmer Corporation, The. System for determining optical aberrations of a telescope optical system. 4,620,790, Cl. 356-124.000.

Hugel, Robert; Kolb, Sven; and Leibhard, Erich, to Hilti Aktiengesellschaft. Screen sleeve for use with a hardenable mass for securing an anchoring element. 4,620,406, Cl. 52-704.000.

Hughes Aircraft Company: *See*—
Chiu, Chen-Shu, 4,621,365, Cl. 375-1.000.
McMillen, Robert J., 4,621,359, Cl. 370-60.000.

Hughes, Ian: *See—*
Ward, Robert W.; and Hughes, Ian, 4,621,089, Cl. 514-303.000.
Hughes, Nathaniel, to Vortran Corporation. Gas-powered nebulizer. 4,620,670, Cl. 239-338.000.
Hughes, William J.; and Wheelock, Franklin R. Screw driving tool. 4,620,461, Cl. 81-461.000.
Hurd, Bruce; and Vauhn, Quentin, to Visual Graphics Corp. Camera platen film positioning apparatus. 4,620,786, Cl. 355-72.000.
Hyatt, John A., to Eastman Kodak Company. Alkylthioalkyl lactones. 4,621,146, Cl. 549-263.000.
Hydro-Quebec: *See—*
Armand, Michel; Muller, Daniel; and Chabagno, Jean-Michel, 4,620,944, Cl. 252-518.000.
Roberge, Gerald; Gavrilovic, Momcilo; and Felletier, Pierre, 4,621,198, Cl. 307-82.000.
Hydromatik GmbH: *See—*
Wuchenauer, Johann, 4,620,417, Cl. 60-431.000.
Hyytinen, Timo, to Valmet Oy. Hammer lock for breech loading firearms. 4,620,384, Cl. 42-41.000.
Ibico AG: *See—*
Baumann, Benny, 4,620,468, Cl. 83-524.000.
Igata, Naohiro; and Sato, Shinji, to Nakasato Limited; and Igata, Naohiro. Spring material for electric and electronic parts. 4,620,885, Cl. 148-435.000.
Iida, Yoshimichi: *See—*
Hosokawa, Hidehiro; Iida, Yoshimichi; and Takahashi, Hisatsugu, 4,620,422, Cl. 62-70.000.
Iiyama, Eiichi: *See—*
Hopkinson, Harold H.; and Iiyama, Eiichi, 4,620,423, Cl. 62-77.000.
Ijidakinro, Olubunmi C. Game with rotating target. 4,620,706, Cl. 273-122.00R.
Ikarus Karosszeria estarmugyar: *See—*
Ivony, Jozsef; Madocsay, Attila; Ratsko, Istvan; Horvath, Bela; and Madi, Jeno , 4,620,717, Cl. 280-432.000.
Ikeda, Mitsushi: *See—*
Suzuki, Kouji; Ikeda, Mitsushi; and Aoki, Toshio, 4,621,260, Cl. 340-719.000.
Ikeda, Tadashi: *See—*
Sato, Toshihiro; Suzuki, Ryo; Ikeda, Tadashi; Takeuchi, Teruaki; and Sugita, Yutaka, 4,621,344, Cl. 365-36.000.
Ikezawa, Harumi: *See—*
Kitoh, Ryozo; and Ikezawa, Harumi, 4,621,067, Cl. 501-136.000.
Ima, Toshio. Microscope specimen slide clip. 4,620,776, Cl. 350-529.000.
Imagawa, Masami, to Sansyu Sangyo Kabushiki Kaisha. Insect killing system. 4,620,388, Cl. 43-130.000.
Imahori, Seiichi; Himeno, Kiyoshi; and Maeda, Shuichi, to Mitsubishi Chemical Industries, Ltd. Phenyl azo cyanothienyl azo anilino dyestuffs. 4,621,136, Cl. 534-761.000.
Imai, Shiro: *See—*
Nishikawa, Toshio; Imai, Shiro; Yagi, Kenkichi; Yoshida, Yuriko; Shimada, Masato; Nagashima, Junnosuke; and Nakamura, Teruo, 4,620,852, Cl. 8-515.000.
Imaide, Takuya: *See—*
Takemoto, Iwao; Ohba, Shinya; Aoki, Masakazu; Ando, Haruhisa; Nakai, Masaaki; Ozaki, Toshifumi; and Imaide, Takuya, 4,621,291, Cl. 358-213.000.
Imatron, Inc.: *See—*
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Imhof, Ernst: *See—*
Reum, Helmut; Frey, Thomas; Grunwald, Werner; Imhof, Ernst; Komaroff, Iwan; Schmid, Gunther; and Schmid, Kurt, 4,620,516, Cl. 123-275.000.
Immel, Gunther: *See—*
Petersen, Harro; Immel, Gunther; Weiss, Wolfram; Schmidt, Horst; and Busse, Gerd, 4,621,133, Cl. 528-252.000.
Imperial Chemical Industries PLC: *See—*
Backhouse, Alan J.; Frangou, Andrew; and Thorne, Stephen J., 4,621,112, Cl. 524-145.000.
Holmes, Paul A., 4,620,999, Cl. 428-35.000.
Wilkinson, John S., 4,620,969, Cl. 423-421.000.
Imperial Group Public Limited Company: *See—*
Bale, Christopher R.; and Gill, Beresford R., 4,620,553, Cl. 131-198.100.
Imtec Management Information Technology Limited: *See—*
Seib, Martin R. P., 4,620,784, Cl. 355-27.000.
INA Walzlager Schaeffler KG: *See—*
Rabe, Jurgen, 4,620,806, Cl. 384-572.000.
Inaba, Hidetoshi: *See—*
Hirabayashi, Hisaaki; Sugimoto, Koichi; Arai, Shinichi; Masui, Tomoyuki; and Inaba, Hidetoshi, 4,620,436, Cl. 73-1.00B.
Inamo, Masaharu: *See—*
Arai, Kenji; and Inamo, Masaharu, 4,621,328, Cl. 364-424.100.
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Industrial Resources, Inc.: *See—*
Rosenberg, Harvey S.; and Genco, Joseph M., 4,620,856, Cl. 55-73.000.
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Booij, Johannes, 4,620,881, Cl. 134-21.000.
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Braun, Jerome M.; Chong, David; and Whittaker, Darren, 4,621,319, Cl. 364-200.000.
Yau, Leopoldo D.; Gasser, Robert A., Jr.; Week, Kenneth R., Jr.; Yu, Jick M.; and Chin, David D., 4,620,986, Cl. 427-93.000.
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Bialas, John S., Jr.; Daniels, Richard J.; and Yoder, Joseph W., 4,621,345, Cl. 365-205.000.
Blum, Arnold, 4,621,363, Cl. 371-25.000.
Chang, Tai-Hon P.; Coane, Philip J.; Hohn, Fritz-Jurgen; Molzen, Walter W., Jr.; and Zingher, Arthur R., 4,621,232, Cl. 324-158.00R.
Lycke, Anders H.; and Soderquist, Curt R., 4,620,754, Cl. 312-330.00R.
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Schepers, Charles; and Schroder, Wolfgang, 4,621,259, Cl. 340-707.000.
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Gavagan, James A., 4,620,742, Cl. 296-97.00K.
Irwin, George F.; and Ebrahimi, Jalal, to Jatel Communications Systems Ltd. Communication switching system. 4,621,361, Cl. 370-85.000.
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Kimura, Fumio; Haga, Takahiro; Maeda, Kazuyuki; Hayashi, Kouji; Seki, Toshio; and Yoshida, Tsunezo, 4,620,868, Cl. 71-90.000.
Ishii, Kenjiro: *See—*
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Ito, Takashi; and Nozaki, Takao, to Fujitsu Limited. Semiconductor device having insulating film. 4,621,277, Cl. 357-54.000.
Ito, Takashi, to Hitachi, Ltd. Thyristor converter control apparatus including differentiation arrangement to prevent abnormal operation. 4,621,314, Cl. 363-54.000.
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Ivony, Jozsef; Madocsay, Attila; Ratsko, Istvan; Horvath, Bela; and Madi, Jeno , to Autoipari Kutato es Fejleszto allala; and Ikarus Karosszeria estarmugyar. Jacknifing-affecting apparatus for vehicles with electronic control. 4,620,717, Cl. 280-432.000.
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Iwata, Kazuo; Takematsu, Tetsuo; Nonaka, Yuji; Nakanishi, Akira; Morinaka, Hideo; Tsuzuki, Kenji; Murakami, Mitsuyuki; and Uotani, Takeshi, to Toyo Soda Manufacturing Co., Ltd. Antifungal compositions. 4,621,090, Cl. 514-332.000.
Izzi, Lewis B., Sr., to Plastic Oddities, Inc. Universal plastic plumbing joint. 4,620,330, Cl. 4-288.000.
J. M. Voith GmbH: *See*—
Skaar, Thomas F., 4,620,671, Cl. 241-19.000.
Wolf, Karl, 4,620,899, Cl. 162-344.000.
Jacob, James J., to Itek Corporation. Star catalog navigation system. 4,621,329, Cl. 364-455.000.
Jacobs, William G., to General Motors Corporation. Vehicle body wheel opening structure. 4,620,745, Cl. 296-198.000.
Jager, Horst; Langheinrich, Klaus; and Herd, Karl-Josef, to Bayer Aktiengesellschaft. Triphendioxazine dyestuffs. 4,621,138, Cl. 544-76.000.
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Sano, Yasuro; Tanaka, Haruhiko; and Murakami, Eiji, 4,620,497, Cl. 112-453.000.
Janssen, Alexander P. Visible index systems. 4,620,383, Cl. 40-360.000.
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Jensen, Jorgen; and Michel, Gregory C., to Bruel & Kjaer Instruments, Inc. Acceleration responsive transducers. 4,620,446, Cl. 73-652.000.
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Pinnavaia, Thomas J.; and Johnson, Ivy D., 4,621,070, Cl. 502-63.000.
Johnston, Daniel U.; Sowash, Thomas R.; and Watson, Richard D., to General Motors Corporation. Actuator for adjustable hydraulic damper. 4,620,620, Cl. 188-319.000.
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Jones, Roydn: *See*—
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Jordan, Harold A.: *See*—
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Joseph, Claude, to Kerma. Ski pole. 4,620,723, Cl. 280-821.000.
Jotwani, Haresh, to Stromberg-Carlson Corporation. Remote switch for telephony switching system. 4,621,358, Cl. 370-56.000.
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Leka, George T., 4,620,794, Cl. 366-131.000.
Jumel, Jean P.; and Guala, Bernard, to Societe Nationale Industrielle et Aerospatiale. Cutting machine. 4,620,466, Cl. 83-177.000.
Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo: *See*—
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Kageyama, Hidehei, to Kotobuki & Co., Ltd. Mechanical pencil. 4,620,811, Cl. 401-65.000.
Kahkipuro, Matti; and Makinen, Heimo, to Elevator GmbH. Method for improving the dynamic converter drive for a direct current elevator motor. 4,621,222, Cl. 318-146.000.
Kain, Richard Y.: *See*—
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Kamen, Dean L., to Baxter Travenol Laboratories, Inc. Modular flow control cassette. 4,620,690, Cl. 251-8.000.
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Kanzaki Paper Mfg. Co., Ltd.: *See*—
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Karanian, Arthur J., to United Technologies Corporation. Variable-geometry inlet. 4,620,679, Cl. 244-53.00B.
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Kato, Kiichi, to Olympus Optical Co., Ltd. Optical memory device. 4,621,352, Cl. 369-54.000.
Kato, Masashi. Apparatus for manufacturing a square filler for water treatment. 4,620,895, Cl. 156-461.000.
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Kauffman, Melvin E., to Tru-Fit Mfg., Inc. Round pipe starter fitting. 4,620,729, Cl. 285-158.000.
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Keseru, Jozsef: *See*—
Grega nee Toth, Erzsebet; Koppany, Eniko ; Bodi, Tibor; Nagy, Jozsef; Dombay, Zsolt; Szarvas, Tibor; Horvath, Laszlo ; Szabo nee Muranyi, Ildiko ; Marton, Jozsef; Pozsar, Bela, Jr.; Viranyi, Sandor; Simon, Peter; Keseru, Jozsef; and Eifert, Jozsef, 4,620,871, Cl. 71-92.000.
Kett Electric Laboratory: *See*—
Toki, Kuni; and Sindou, Osamu, 4,621,228, Cl. 324-61.00R.
Keyser, Graham M.; Mader, David L.; and O'Neill, James A. Method for isotope replenishment in an exchange liquid used in a laser induced isotope enrichment process. 4,620,909, Cl. 204-157.220.
Khlafallah, Mohamed Z.; and Lee, Hong M., to Bechtel International Corporation. Energy absorbing apparatus for piping system and the like. 4,620,688, Cl. 248-542.000.
Khuri-Yakub, Butrus T., to Leland Stanford Junior University, The Board of Trustees of The. Low frequency acoustic microscope. 4,620,443, Cl. 73-606.000.
Kidde, Inc.: *See*—
Woodworth, John L.; and Lynch, John M., 4,620,647, Cl. 222-215.000.
Kielman, Hendrik S.; and Bongers, Jan S., to Lever Brothers Company. Machine-dishwashing compositions. 4,620,936, Cl. 252-99.000.
Kieta, Harold J.: *See*—
Hopkins, Ronald J.; Thomas, Evan G.; and Kieta, Harold J., 4,620,934, Cl. 252-79.400.
Kikuchi, Haruhiko, to Nisshin Flour Milling Co., Ltd.; and Nisshin Chemicals Co., Ltd. Process for preparing 4-(4-biphenylyl)-4-oxobutanoic acid. 4,621,154, Cl. 562-459.000.
Kilmer, Paul R., to Cooper Industries, Inc. Hand squeeze terminal wire connecting tool. 4,620,574, Cl. 140-124.000.
Kim, Nam Kyun. Super fastener. 4,620,812, Cl. 402-68.000.
Kim, Oh-Kil, to United States of America, Navy. Electrically conductive ladder polymers. 4,620,942, Cl. 252-500.000.
Kimball, David V., to Kimball Industries, Inc. Single pin, uniplanar driver bar assembly. 4,620,447, Cl. 73-662.000.
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Kimball, David V., 4,620,447, Cl. 73-662.000.
Kimberly-Clark Corporation: *See*—
Fleischer, Glen R.; Glashagel, Barry B.; Harke, Elwood W.; Sokolowski, Robert C.; and Fay, James E., 4,621,011, Cl. 428-221.000.
Kimble, Erma N. Hand sanitizer. 4,620,502, Cl. 118-419.000.
Kimoto, Toshifumi; Itami, Teruhiko; Yamasawa, Akira; Nishikawa, Eiji; and Nishimura, Nobuo, to Fuji Xerox Co., Ltd. Magnetic recording arrangement for thermographic printing apparatus. 4,621,269, Cl. 346-74.400.
Kimura, Fumio; Haga, Takahiro; Maeda, Kazuyuki; Hayashi, Kouji; Seki, Toshio; and Yoshida, Tsunezo, to Ishihara Sangyo Kaisha, Ltd. N-[(4,6-dimethoxypyrimidin-2-yl)aminocarbonyl]-3[halo-substituted ethenyl (or propenyl)]-2-thiophenesulfonamides useful as herbicides. 4,620,868, Cl. 71-90.000.
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Nakamura, Masaru; and Kinoshita, Osamu, 4,621,376, Cl. 455-613.000.
Kinzig, Michael. Cabinet for the storage and carrying of record albums. 4,620,740, Cl. 294-159.000.
Kirchner, Edward C., to Beloit Corporation. Composite flexible pulp refiner disk. 4,620,675, Cl. 241-261.300.

Kirkwood, James R.: *See*—
Gordon, Warren A.; Hempenius, Walter L.; and Kirkwood, James R., 4,620,981, Cl. 426-448.000.

Kiser, Joseph H., to Vari-L Company, Inc. Wide range electronic oscillator. 4,621,241, Cl. 331-117.00R.

Kishi, Norimasa: *See*—
Suzuki, Tadashi; Takeda, Hitoshi; and Kishi, Norimasa, 4,621,322, Cl. 364-200.000.

Kishimoto, Shinzo; Abe, Akira; and Ohno, Shigeru, to Fuji Photo Film Co., Ltd. Method for processing color photographic light-sensitive material. 4,621,047, Cl. 430-393.000.

Kita, Yasuo: *See*—
Morita, Hideyo; Akagawa, Tomohiko; and Kita, Yasuo, 4,621,115, Cl. 524-494.000.

Kitada, Ritsuo: *See*—
Ueshima, Michio; Takahashi, Yoshiyuki; Kitada, Ritsuo; and Nagai, Isao, 4,621,155, Cl. 562-534.000.

Kitagawa, Kazuo: *See*—
Moritoki, Masato; Fujikawa, Takao; Kitagawa, Kazuo; and Miyanaga, Junichi, 4,620,839, Cl. 425-405.00H.

Kitamura, Kazuyuki, to Asahi Kasei Kogyo Kabushiki Kaisha. Polyhexamethylene adipamide fiber having high dimensional stability and high fatigue resistance, and process for preparation thereof. 4,621,021, Cl. 428-364.000.

Kitamura, Kunihiro: *See*—
Takatori, Oushou; Kanda, Osami; and Kitamura, Kunihiro, 4,620,494, Cl. 112-121.150.

Kitano, Kissho: *See*—
Duvdevani, Ilan; Schulz, Donald N.; Kitano, Kissho; and Peiffer, Dennis G., 4,621,111, Cl. 524-107.000.

Kiteley, Kenneth J., to Zenith Electronics Corporation. Soft-start capacitor discharge circuit. 4,621,313, Cl. 363-49.000.

Kito, Kyoji: *See*—
Kuzuya, Fumio; Kito, Kyoji; and Uchida, Hisaaki, 4,621,076, Cl. 514-48.000.

Kitoh, Ryozo; and Ikezawa, Harumi, to UBE Industries, Ltd. Dielectric ceramic composition. 4,621,067, Cl. 501-136.000.

Kleeper Beteilingungs GmbH & Co. Bootsbau KG: *See*—
Kuhlmann, Werner; and Uphoff, Heinrich, 4,621,002, Cl. 428-71.000.

Kleinschmit, Peter: *See*—
Strack, Hans; Kleinschmit, Peter; and Parr, Ehrfried, 4,620,399, Cl. 52-172.000.

Kliesch, Wilfried; Koch, Friedrich O.; Wahl, Hans J.; Krebs, Rolf; Schorr, Peter; and Strauch, Heinz, to Hoesch Werke Aktiengesellschaft. Method of and device for monitoring and/or controlling welding current in the high-frequency resistance pressure welding of pipes with longitudinal seams. 4,621,176, Cl. 219-8.500.

Kliklok Corporation: *See*—
McElvy, Howell T., 4,620,409, Cl. 53-551.000.

Knappe, Kurt, to Linde Aktiengesellschaft. Multiply extensible lifting frames. 4,620,614, Cl. 187-9.00E.

Knickerbocker, Robert H., to Siemon Company, The. Eight conductor modular test adapter. 4,620,765, Cl. 339-154.00A.

Knoblauch, Hubert: *See*—
Marsland, George E.; Marschner, Heinz; Wiemer, Klaus; Weyer, Thomas; and Knoblauch, Hubert, 4,620,819, Cl. 405-185.000.

Knoch, Martin: *See*—
Hilge, Bernhard; Kramer, Carl; and Knoch, Martin, 4,620,840, Cl. 432-121.000.

Knoll International, Inc.: *See*—
Latone, Thomas L., 4,620,430, Cl. 70-431.000.

Knorr, Andreas: *See*—
Ulrich, Rosentreter; Thomas, Cunter; and Knorr, Andreas, 4,621,093, Cl. 514-355.000.

Kobayashi, Hideyuki: *See*—
Mitsui, Tsutomu; Kobayashi, Hideyuki; and Hirosawa, Kouichiro, 4,620,624, Cl. 192-0.076.

Kobayashi, Hiroshi: *See*—
Saito, Tamio; Kobayashi, Hiroshi; and Hori, Shigekazu, 4,621,190, Cl. 235-492.000.

Koch Engineering Company, Inc.: *See*—
Hsieh, Chang-Li, 4,620,952, Cl. 261-114.00R.

Koch, Friedrich O.: *See*—
Kliesch, Wilfried; Koch, Friedrich O.; Wahl, Hans J.; Krebs, Rolf; Schorr, Peter; and Strauch, Heinz, 4,621,176, Cl. 219-8.500.

Koch, Otto: *See*—
Wingler, Frank; Koch, Otto; Lindner, Christian; and Reinking, Klaus, 4,621,117, Cl. 525-67.000.

Koegel, Ewald; and Sheffield, Paul J., to United States of America, Air Force. Light-weight oxygen delivery hood assembly for hyperbaric chamber. 4,620,538, Cl. 128-201.230.

Kohaut, Gunter; Weber, Werner; Groenendijk, Herman; Poppelaars, Adrianus C.; and Janssen, Wilhelmus H. J., to Hoechst Aktiengesellschaft. Expandable plastics granular material having at least one orifice. 4,621,022, Cl. 428-397.000.

Kohmoto, Osamu: *See*—
Takasugi, Yasufumi; Kohmoto, Osamu; Sugihara, Hiroshi; and Nishimatsu, Masaharu, 4,621,008, Cl. 428-216.000.

Kohno, Hideki: *See*—
Yoshida, Minoru; Yamada, Hiromichi; Uchida, Yoko; Kohno, Hideki; and Takagi, Hiroshi, 4,621,194, Cl. 250-367.000.

Koide, Masakazu; Okazaki, Takashi; and Asari, Takashi, to Sumitomo Metal Industries, Ltd.; and Sumitomo Heavy Industries, Ltd. Loop type continuous metal casting machine. 4,620,583, Cl. 164-154.000.

Koisuka, Mikio; and Aoki, Hisao, to Sanden Corporation. Aluminum heat exchanger. 4,620,590, Cl. 165-150.000.

Koken, Karel G. M.: *See*—
Beyersbergen van Henegouwen, Cornelis M.; Koken, Karel G. M.; and Olierook, John C. J., 4,621,297, Cl. 360-132.000.

Kokubu, Jun: *See*—
Suzumori, Takeo; Kokubu, Jun; and Kubota, Minoru, 4,620,970, Cl. 423-579.000.

Kolb, Sven: *See*—
Hugel, Robert; Kolb, Sven; and Leibhard, Erich, 4,620,406, Cl. 52-704.000.

Koller, Josef. Device for cleaning the pipes of pipe heat-exchangers. 4,620,589, Cl. 165-95.000.

Kolts, John H., to Phillips Petroleum Company. Conversion of C_3 and C_4 hydrocarbons to less saturated hydrocarbons. 4,621,163, Cl. 585-653.000.

Kolts, John H.: *See*—
Delzer, Gary A.; and Kolts, John H., 4,621,162, Cl. 585-651.000.

Komagata, Atsushi, to Alps Electric Co., Ltd. Magnetic head unit. 4,621,296, Cl. 360-121.000.

Komaroff, Iwan: *See*—
Reum, Helmut; Frey, Thomas; Grunwald, Werner; Imhof, Ernst; Komaroff, Iwan; Schmid, Gunther; and Schmid, Kurt, 4,620,516, Cl. 123-275.000.

Komeda, Tadao: *See*—
Ueno, Atushi; and Komeda, Tadao, 4,621,275, Cl. 357-30.000.

Komuro, Kenichi: *See*—
Murakami, Yuichi; Komuro, Kenichi; Kawai, Taneichi; Terabayashi, Gosaku; and Ohta, Hisatoshi, 4,621,223, Cl. 318-282.000.

Kondo, Shiro; and Sawada, Kenji, to Alps Electric Co., Ltd. Composite switch. 4,621,174, Cl. 200-5.00R.

Konig, Klaus: *See*—
Dietrich, Manfred; Schmidt, Manfred; Wiedermann, Rolf; and Konig, Klaus, 4,621,104, Cl. 521-107.000.

Konig, Wolfgang: *See*—
Friedrich, Axel; Konig, Wolfgang; Teetz, Volker; Geiger, Rolf; and Sandow, Jurgen K., 4,621,073, Cl. 514-11.000.

Kono, Koichi; Mori, Shoichi; Miyasaka, Kenji; and Tabuchi, Jyoichi, to Toa Nenryo Kogyo Kabushiki Kaisha. Polyethylene microporous membrane and a process for the production of the same. 4,620,955, Cl. 264-41.000.

Kontz, Robert F.; and Moore, Gary L., to Owens-Illinois, Inc. Method for applying heat shrinkable conical plastic labels on containers. 4,620,887, Cl. 156-64.000.

Koon, Ooi T., to RCA Corporation. Automatic pin extraction apparatus for integrated circuit tube. 4,620,366, Cl. 29-762.000.

Koors, Carl W.: *See*—
Gabella, Francois; Graf, Raymond J.; and Koors, Carl W., 4,620,435, Cl. 72-389.000.

Kopesky, Albert B., to Productive Instrument & Machine, Inc. Lock and coupling for securing fire hydrants. 4,620,428, Cl. 70-175.000.

Koppany, Eniko : *See*—
Grega nee Toth, Erzsebet; Koppany, Eniko ; Bodi, Tibor; Nagy, Jozsef; Dombay, Zsolt; Szarvas, Tibor; Horvath, Laszlo ; Szabo nee Muranyi, Ildiko ; Marton, Jozsef; Pozsar, Bela. Jr.; Viranyi, Sandor; Simon, Peter; Keseru, Jozsef; and Eifert, Jozsef, 4,620,871, Cl. 71-92.000.

Koppers, Manfred: *See*—
Heintzmann, Peter; Koppers, Manfred; Bohnes, Karlheinz; and Kunzer, Heinz, 4,620,748, Cl. 299-18.000.

Kosuge, Masao; and Fukuda, Junji, to Mitsubishi Chemical Industries Ltd. Aminopolyol anion exchange resins for separation isotopes. 4,621,103, Cl. 521-28.000.

Kotobuki & Co., Ltd.: *See*—
Kageyama, Hidehei, 4,620,811, Cl. 401-65.000.

Kottgen GmbH & Co. Kommanditgesellschaft: *See*—
Gronau, Paul; and Gronau, Jurgen, 4,620,486, Cl. 104-121.000.

Kozak, Otto. Method of coating articles of magnesium and an electrolytic bath therefor. 4,620,904, Cl. 204-58.400.

Kraft, Inc.: *See*—
Miller, Roland E.; Borgardt, Henry; and Valek, John, 4,620,838, Cl. 425-135.000.

Kramer, Carl: *See*—
Hilge, Bernhard; Kramer, Carl; and Knoch, Martin, 4,620,840, Cl. 432-121.000.

Kraus, Charles E., to Excelermatic Inc. Traction roller transmission. 4,620,455, Cl. 74-798.000.

Krause, Joachim: *See*—
Romer, Michael; Krause, Joachim; Eidenschink, Rudolf; and Weber, Georg, 4,620,938, Cl. 252-299.630.

Krebs, Rolf: *See*—
Kliesch, Wilfried; Koch, Friedrich O.; Wahl, Hans J.; Krebs, Rolf; Schorr, Peter; and Strauch, Heinz, 4,621,176, Cl. 219-8.500.

Krinickas, Alexander, Jr., to Sundstrand Corporation. Electric generator cooling arrangement. 4,621,210, Cl. 310-61.000.

Kristof, Mark J.; and Spencer, Donald J., to Whirlpool Corporation. Cavity illumination means for microwave oven. 4,621,180, Cl. 219-10.55R.

Krueger, Leland R.: *See*—
Charlton, Richard J.; Krueger, Leland R.; Noling, Richard M.; Saunders, Jimmy G.; and Elliott, Richard J., 4,620,359, Cl. 29-557.000.

Krumm, Jurgen: *See*—
Eckstein, Rolf; Buhl, Siegfried; and Krumm, Jurgen, 4,620,824, Cl. 409-233.000.

Kubo, Kazuyuki: *See*—
Fujieda, Toshiaki; and Kubo, Kazuyuki, 4,621,343, Cl. 364-900.000.

Kubota, Minoru: *See*—
Suzumori, Takeo; Kokubu, Jun; and Kubota, Minoru, 4,620,970, Cl. 423-579.000.

Kubota, Takuo: *See*—
Nagamoto, Mitsuki; Nakahata, Atsushi; and Kubota, Takuo, 4,621,246, Cl. 335-78.000.

Kuck, Mark A.: *See*—
Michel, Christian G.; Schachter, Rozalie; Kuck, Mark A.; Baumann, John A.; and Raccah, Paul M., 4,620,968, Cl. 423-299.000.

Kudo, Toichi; Abe, Takasi; and Ogawa, Seiichiro, to Hitachi, Ltd.; and Nissan Motor Co., Ltd. Arithmetic logic uait of a sequence controller. 4,621,317, Cl. 364-147.000.

Kuga, Ryuichiro: *See*—
Hirao, Yoshiaki; Kuga, Ryuichiro; and Nagaoka, Yoshitomi, 4,621,292, Cl. 358-227.000.

Kuhlmann, Werner; and Uphoff, Heinrich, to Kleeper Beteilingungs GmbH & Co. Bootsbau KG. Monocoque structure for an aquatic sportscraft. 4,621,002, Cl. 428-71.000.

Kulczycki, Elaine S.; and Lamarche, Paul E., to Borg-Warner Corporation. Centrifugally activated roller clutch/overrunning clutch. 4,620,621, Cl. 192-3.310.

Kulzer & Co. GmbH: *See*—
Garschke, Adelheid; Tiller, Hans-Jurgen; Gobel, Roland; Magnus, Brigitte; and Oppawsky, Steffen, 4,620,988, Cl. 427-223.000.

Kumakura, Masumi; Kawashima, Takeshi; and Sakai, Otoya, to Victor Company of Japan, Ltd. Automatic magnetic tape loading apparatus. 4,620,678, Cl. 242-195.000.

Kumar, Rajendra; and Meyerson, Robert F., to Telxon Corporation. Hand held data entry apparatus. 4,621,189, Cl. 235-472.000.

Kumazawa, Toshiharu, to Yamaha Hatsudoki Kabushiki Kaisha. Shift control device of vehicular transmission. 4,620,453, Cl. 74-476.000.

Kunz, Walter: *See*—
Quack, Jochen M.; Reng, Alwin; Skrypzak, Werner; and Kunz, Walter, 4,620,976, Cl. 424-70.000.

Kunzer, Heinz: *See*—
Heintzmann, Peter; Koppers, Manfred; Bohnes, Karlheinz; and Kunzer, Heinz, 4,620,748, Cl. 299-18.000.

Kupfer, Jeffrey H. Bipedal guidance system and method. 4,620,816, Cl. 404-6.000.

Kuppinger, Gunter: *See*—
Muller, Gunter; Damm, Norbert; and Kuppinger, Gunter, 4,620,585, Cl. 164-169.000.

Kurando, Shigeo; Amakawa, Katsumi; and Kawamori, Yoshizo, to Mita Kogyo Kabushiki Kaisha. Automatic document feeder. 4,620,782, Cl. 355-14.0SH.

Kurihara, Nobuo: *See*—
Nishikawa, Mitsuyo; Kurihara, Nobuo; Sato, Yoshio; Watanabe, Atsumi; Higashi, Toshihiko; Miyagaki, Hisanori; Yokogawa, Atsushi; and Shimada, Yoshihiro, 4,620,491, Cl. 110-185.000.

Kuriki, Choei: *See*—
Yamada, Hisafumi; Kuriki, Choei; and Saito, Junya, 4,621,288, Cl. 358-153.000.

Kurkov, Victor P.: *See*—
Denisevich, Peter, Jr.; Schroeder, Albert H.; Kurkov, Victor P.; and Suzuki, Shigeto, 4,620,943, Cl. 252-518.000.

Kuroda, Juzo: *See*—
Yoshikawa, Kimio; Fukuo, Hidetoshi; and Kuroda, Juzo, 4,620,941, Cl. 252-408.100.

Kuroki, Yoshiaki: *See*—
Takami, Akio; Matsuura, Toshitaka; Sekiya, Toshifumi; and Kuroki, Yoshiaki, 4,620,437, Cl. 73-23.000.

Kurosawa, Tadashi, to Tensho Electric Industrial Co., Ltd. Foot bath. 4,620,529, Cl. 128-66.000.

Kurtin, Stephen; McGurk, Dan L.; Fedele, Daniel E.; and Kelm, Edward C., to Protype Corporation. Display typewriter. 4,620,808, Cl. 400-83.000.

Kurtz, Ronald C., to American Standard Inc. Solenoid-operated valve. 4,620,567, Cl. 137-627.500.

Kusunoki, Shigeru; and Nobue, Tomotaka, to Matsushita Electric Industrial Co., Ltd. Microwave heating apparatus. 4,621,179, Cl. 219-10.55A.

Kuwahara, Eiji: *See*—
Tanaka, Tatsuo; Miyazaki, Koichi; Kuwahara, Eiji; Yamazaki, Masaya; and Morita, Keiichi, 4,620,424, Cl. 62-222.000.

Kuzuya, Fumio; Kito, Kyoji; and Uchida, Hisaaki, to Meito Sangyo Kabushiki Kaisha. Pharmaceutical composition useful for inhibiting platelet aggregation. 4,621,076, Cl. 514-48.000.

Kva-Spil Ltd.: *See*—
Stafset, Kare, 4,620,393, Cl. 49-394.000.

Kyocera Corporation: *See*—
Isogami, Mineo; and Nakata, Ryosuke, 4,621,065, Cl. 501-86.000.

L. P. Larsson AB: *See*—
Larsson, Lars P., 4,621,195, Cl. 250-438.000.

Lacasa, Jaime; and Lacasa, Judith N. Folding shipping container. 4,620,666, Cl. 229-149.000.

Lacasa, Judith N.: *See*—
Lacasa, Jaime; and Lacasa, Judith N., 4,620,666, Cl. 229-149.000.

Lacher, William A., to Burroughs Corporation. Position retaining mechanism. 4,620,813, Cl. 403-93.000.

Lachmitz, Horst, to Hoesch AG. Method of manufacturing multilayer screw seam pipes and device for carrying out the method. 4,621,181, Cl. 219-62.000.

Lachnit-Fixson, Ursula; and Unger, Renate, to Schering Aktiengesellschaft. Multistage combination preparation and its use for oral contraception. 4,621,079, Cl. 514-170.000.

Lad, Dalubhai M., to Avery International Corporation. Tear resistant plastic sheet for use in xerographic copiers. 4,621,009, Cl. 428-216.000.

Ladin, Eli M., to Federal-Mogul Corporation. Fluid actuated clutch assembly. 4,620,625, Cl. 192-85.0CA.

Lagow, Richard J.; and Dumitru, Earl T. Fluorinated elastomeric materials. 4,621,107, Cl. 522-131.000.

Laird, Owen A. Bathtub splash collector. 4,620,332, Cl. 4-559.000.

Lakatos, George C. Method of inhibiting the growth of malignant tumor cells. 4,620,972, Cl. 424-1.100.

Lalvani, Haresh. Crescent-shaped polygonal tiles. 4,620,998, Cl. 428-33.000.

Lamarche, Paul E.: *See*—
Kulczycki, Elaine S.; and Lamarche, Paul E., 4,620,621, Cl. 192-3.310.

Lamb, C. Paul, to Teledyne Industries, Inc. High pressure injection valve. 4,620,597, Cl. 166-373.000.

Lambert, Georges; and Ferre, Guy, to Curty. Head gasket for an internal-combustion engine. 4,620,710, Cl. 277-235.00B.

Lambertz, Horst: *See*—
Schwarze, Werner; Wolff, Siegfried; Remmel, Hans; and Lambertz, Horst, 4,621,121, Cl. 525-329.300.

Lampman, James A.: *See*—
Myers, Donald H.; and Lampman, James A., 4,620,890, Cl. 156-196.000.

Landa, Benzion; Sagiv, Oded; and Levy, Nathan A., to Savin Corporation. Copy sheet registration assembly for electrophotographic copier. 4,620,699, Cl. 271-245.000.

Landis, Geoffrey A., to Spire Corporation. Method of making a cross-grooved solar cell. 4,620,364, Cl. 29-572.000.

Langheinrich, Klaus: *See*—
Jager, Horst; Langheinrich, Klaus; and Herd, Karl-Josef, 4,621,138, Cl. 544-76.000.

Langner, Carl G., to Shell Oil Company. Flowline connection means. 4,620,818, Cl. 405-169.000.

Langrick, David J.: *See*—
Keeling, Michael R.; and Langrick, David J., 4,621,268, Cl. 346-1.100.

Lanier, Willard E.; and Paez, Juan B., to Camp International, Inc. Halo traction brace. 4,620,530, Cl. 128-75.000.

Lankford, Frank L., Jr.: *See*—
Brown, Winthrop K.; and Lankford, Frank L., Jr., 4,620,421, Cl. 62-3.000.

Lanza, Thomas J., Jr.: *See*—
Tischler, Allan N.; and Lanza, Thomas J., Jr., 4,621,091, Cl. 514-337.000.

Lardenois, Patrick: *See*—
Wick, Alexander; Frost, Jonathan; and Lardenois, Patrick, 4,621,087, Cl. 514-300.000.

Larsen, Uffe M. Coupling device for pipelines. 4,620,730, Cl. 285-166.000.

Larsson, Lars P., to L. P. Larsson AB. Apparatus for destroying microorganisms. 4,621,195, Cl. 250-438.000.

Laruelle, Claude; Lepant, Marcel; and Raynier, Bernard, to Panmedica. N-acyl derivatives of amino acids and their esters, and drugs in which they are present. 4,621,088, Cl. 514-300.000.

Laskowski, Donald R.; and Tekulve, Daniel R. Dry kiln and method. 4,620,373, Cl. 34-16.500.

Latone, Thomas L., to Knoll International, Inc. Universal lock plug. 4,620,430, Cl. 70-431.000.

Lay nee Konya, Aranka: *See*—
Budai, Zoltan; Mezei, Tibor; Lay nee Konya, Aranka; Petocz, Lujza; Grasser, Katalin; and Orr, Zsuzsanna, 4,621,101, Cl. 514-640.000.

LeBoeuf, Albert R.: *See*—
Singer, Helmut; Bellantoni, Ellen; and LeBoeuf, Albert R., 4,620,954, Cl. 264-1.400.

Lech, Thaddeus, Jr.; and Mullard, Bruce A., to Borg-Warner Automotive, Inc. Clutch driven plate assembly with an anti-rattle damper. 4,620,626, Cl. 192-106.200.

Lechtken, Peter; Trauth, Hubert; Weiss, Stefan; and Hettche, Albert, to BASF Aktiengesellschaft. Polypropylene stabilizing anti-oxidant 2,3-dihydrobenz-4-oxa-1-thiin derivatives, compositions and method of use therefor. 4,621,109, Cl. 524-83.000.

Lee, Hong M.: *See*—
Khlafallah, Mohamed Z.; and Lee, Hong M., 4,620,688, Cl. 248-542.000.

Lee, James K., to Eastman Kodak Company. Reversible vibratory motor. 4,621,221, Cl. 318-123.000.

Lee, Sae D., to Zenith Electronics Corporation. Contrast enhancing optical coupling pad for projection TV. 4,621,294, Cl. 358-237.000.

Leek, Bobby J.: *See*—
Gaunt, Joseph J.; and Leek, Bobby J., 4,620,733, Cl. 292-39.000.

LeFevre, Philippe: *See*—
Echasseriau, Gilbert; LeFevre, Philippe; and Oliveau, Patrice, 4,621,250, Cl. 338-162.000.

Le Gall, Jean C.; and Mathieu, Bernard. Device for stabilizing and aiming an antenna, more particularly on a ship. 4,621,266, Cl. 342-359.000.

Leiber, Heinz, to Robert Bosch GmbH. Main brake cylinder. 4,620,750, Cl. 303-114.000.

Leibhard, Erich: *See—*
Hugel, Robert; Kolb, Sven; and Leibhard, Erich, 4,620,406, Cl. 52-704.000.

Leibson, Irving; and Huettenhain, Horst, to Bechtel International Corporation. Apparatus and method for converting pipeline fine coal slurry to coal water mixture suitable for direct combustion in boilers. 4,620,672, Cl. 241-21.000.

Leineweber, Michael: *See—*
Puhler, Alfred; Wohlleben, Wolfgang; and Leineweber, Michael, 4,621,061, Cl. 435-320.000.

Leka, George T., to Jule Inc. Gradient formers. 4,620,794, Cl. 366-131.000.

Leland Stanford Junior University, The Board of Trustees of The: *See—*
Khuri-Yakub, Butrus T., 4,620,443, Cl. 73-606.000.

Lemke, Otto, to Carl Still GmbH & Co. KG. Device for tilting and turning coke-oven doors for maintenance purposes. 4,620,828, Cl. 414-684.300.

Lemmon, Patrick. Custom construction system. 4,620,747, Cl. 297-440.000.

Lenox Hill Brace Shop, Inc.: *See—*
Housworth, John R., 4,620,532, Cl. 128-80.00C.

Lentine, Charles W.: *See—*
Hersh, Marvin; and Lentine, Charles W., 4,620,974, Cl. 424-37.000.

Leon, Denise R.: *See—*
Ciccarelli, Roger N.; and Leon, Denise R., 4,621,039, Cl. 430-106.000.

Leonard, Russell J., to Molex Incorporated. Terminal with improved retention means. 4,620,766, Cl. 339-217.00S.

Leonardson, Ronald B.: *See—*
MacGugan, Douglas C.; Leonardson, Ronald B.; and Sand, William W., 4,620,442, Cl. 73-517.00R.

Le Page, Jean-Francois: *See—*
Quang, Dang Vu; Raimbault, Claude; Bonifay, Regis; and Le Page, Jean-Francois, 4,620,940, Cl. 252-373.000.

Lepant, Marcel: *See—*
Laruelle, Claude; Lepant, Marcel; and Raynier, Bernard, 4,621,088, Cl. 514-300.000.

L'Esperance, Chantal; and Belanger, Germain, to Societe Nationale de l'Amiante. Structural rod for reinforcing concrete material. 4,620,401, Cl. 52-309.150.

Le Strange, John R.: *See—*
Gore, Gordon B.; Clark, Malcolm J.; and Le Strange, John R., 4,620,605, Cl. 181-135.000.

Lever Brothers Company: *See—*
Kielman, Hendrik S.; and Bongers, Jan S., 4,620,936, Cl. 252-99.000.

Levy, Nathan A.: *See—*
Landa, Benzion; Sagiv, Oded; and Levy, Nathan A., 4,620,699, Cl. 271-245.000.

Lewis, Walter E., Jr., to General Electric Company. Friction applying assembly. 4,620,344, Cl. 16-337.000.

Licentia Patent-Verwaltungs-GmbH: *See—*
Kerpers, Werner; and Durstewitz, Thomas, 4,620,392, Cl. 49-382.000.

Liebe, Johan; Geven, Andreas S. G.; Driessen, Antonius J. G. C.; and deBie, Jan R., to U.S. Philips Corporation. High-pressure discharge lamp with shielded electrode. 4,621,216, Cl. 313-613.000.

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Easter, William M.; Gifford, Eric; Wehrmann, Rick S.; and Liebhart, Dana, 4,620,888, Cl. 156-64.000.

Lin, David C. K.; Huey, Larry J.; and Kaveh, Farrokh, to Owens-Corning Fiberglas Corporation. Method for making coalesced mineral fibers. 4,620,859, Cl. 65-2.000.

Lin, Jiang-Jen, to Texaco Inc. Process for amidocarbonylation of cyclic amides. 4,620,949, Cl. 260-525.000.

Lin, Ju-Chui; Carlson, Gary M.; and Abbey, Kirk J., to SCM Corporation. Polyesters derived from 2,2-dimethyl-4-methyleneglutaric acid and coatings prepared therefrom. 4,621,131, Cl. 528-192.000.

Linck, Erich; Holik, Herbert; Siewert, Woflgang; and Selbherr, Anton, to Sulzer-Escher Wyss GmbH. Floatation apparatus for flotation of fibrous stock suspension recovered from waste paper. 4,620,926, Cl. 210-221.200.

Linde Aktiengesellschaft: *See—*
Knappe, Kurt, 4,620,614, Cl. 187-9.00E.

Lindlar, Ernest E.: *See—*
Kaufman, George; and Lindlar, Ernest E., 4,620,664, Cl. 229-17.00R.

Lindner, Adalbert: *See—*
Winter, Rudolf; Horner, Albert; and Lindner, Adalbert, 4,620,889, Cl. 156-166.000.

Lindner, Christian: *See—*
Wingler, Frank; Koch, Otto; Lindner, Christian; and Reinking, Klaus, 4,621,117, Cl. 525-67.000.

Lindsey, David James: *See—*
Good, John C., 4,620,611, Cl. 182-106.000.

Linnett, Ian W.: *See—*
Baird, John P.; Linnett, Ian W.; and MacLeod, William J., 4,620,834, Cl. 416-32.000.

Lippincott, Louis A., to Syntex Computer Systems, Inc. Non-volatile reprogrammable ram cartridge. 4,620,707, Cl. 273-148.00B.

Lipton, Lewis T.: *See—*
Zwemer, Dirk A.; Beilin, Solomon I.; Truong, Long K.; and Lipton, Lewis T., 4,620,916, Cl. 204-299.00R.

Liqui-Box Corporation: *See—*
Schieser, Warren J.; Vickers, Stanley E.; and Duffey, Craig L., 4,620,411, Cl. 53-570.000.

Lisle Corporation: *See—*
Morris, Gary D., 4,620,360, Cl. 29-566.100.

Lissau, Frederic, to Sloan Valve Company. Lavatory system for use in potentially vandalized areas. 4,620,328, Cl. 4-192.000.

Livermore, David G. H.: *See—*
O'Callaghan, Cynthia H.; Ayres, Barry E.; Livermore, David G. H.; Newall, Christopher E.; and Weir, Niall G., 4,621,081, Cl. 514-206.000.

Livne, Zvi, to Polyzive. Practice bomb. 4,620,484, Cl. 102-395.000.

Lockheed Missiles & Space Company, Inc.: *See—*
Rusk, Stanley J., 4,621,256, Cl. 340-347.00P.

Loessel, Mark C.; Miller, Randall W.; and Myers, Robert W., to Miles Laboratories, Inc. Sensor integrator system. 4,621,204, Cl. 307-311.000.

Loev, Bernard; and Chan, Wan-Kit, to USV Pharmaceutical Corporation. Polyene compounds useful in the treatment of allergic responses. 4,621,099, Cl. 514-570.000.

Loggins, Jack; Chester, Walt; and Walker, Leon, to Burlington Industries, Inc. Device to aid in the removal of residual textile material from a core element. 4,620,346, Cl. 28-295.000.

Loisel, Jean-Marie: *See—*
Dolph, Darrel A.; Demski, Leonard W.; Taylor, Robert E.; and Loisel, Jean-Marie, 4,621,327, Cl. 364-424.000.

London, William C.: *See—*
Applegate, Barry G.; and London, William C., 4,620,891, Cl. 156-212.000.

Long, Delmar D.; and Anderson, John F., Jr., to Dayco Corporation. Polymeric-coated fabric layer, product utilizing the layer and method and apparatus for making the same. 4,621,005, Cl. 428-86.000.

Long, John V.; and Gagliani, John. Low density, modified polyimide foams and methods of making same. 4,621,015, Cl. 428-317.700.

Lookholder, Theodore W. Protective envelope device for packaging fragile articles. 4,620,633, Cl. 206-523.000.

Lopapa, Alberto F.: *See—*
Wyatt, Philip J.; and Lopapa, Alberto F., 4,621,063, Cl. 436-501.000.

Lotterbach, Gerhard: *See—*
Gloss, Erwin; Lotterbach, Gerhard; Perenthaler, Egbert; Schenk, Manfred; van Woudenberg, Jan F.; and Zucker, Udo, 4,620,420, Cl. 60-602.000.

Lourenco, Jose A.: *See—*
Brasen, Daniel; DiGiuseppe, Michael A.; Lourenco, Jose A.; and Mahajan, Subhash, 4,620,854, Cl. 23-293.00R.

Loutfy, Rafik O.: *See—*
Kazmaier, Peter M.; Baranyi, Giuseppa; and Loutfy, Rafik O., 4,621,038, Cl. 430-59.000.

Lovelace Medical Foundation: *See—*
Caprihan, Arvind, 4,621,234, Cl. 324-306.000.

Lovrenich, Rodger T. Control device including a conductively isolated depluggable controller. 4,621,200, Cl. 307-149.000.

Lowe Alpine Systems, Inc.: *See—*
Lowe, Greg E.; and Jordan, Harold A., 4,620,579, Cl. 150-52.00J.

Lowe, Greg E.; and Jordan, Harold A., to Lowe Alpine Systems, Inc. Accessory receptacle. 4,620,579, Cl. 150-52.00J.

Lu, Pang-Chia, to Mobil Oil Corporation. Biaxially oriented polyolefin films with ethylene-vinyl alcohol barrier layer. 4,621,014, Cl. 428-216.000.

Lu, Pang-Chia, to Mobil Oil Corporation. Polypropylene-polyethylene-(ethylene-propylene rubber) compositions and films thereof with improved tear strength. 4,621,119, Cl. 525-240.000.

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Higgins, William A., 4,620,855, Cl. 44-62.000.

Luckenbach, Edward C.: *See—*
Fligner, Mark; and Luckenbach, Edward C., 4,620,508, Cl. 122-7.00R.

Ludwig, Hans G.: *See—*
Theall, C. Earle, Jr.; Ludwig, Hans G.; and Gustin, Michael J., 4,621,242, Cl. 333-17.00M.

Lukacz, Stephen A.: *See—*
Hanstine, Kenneth W.; Lukacz, Stephen A.; and Nelson, Jeffrey N., 4,620,674, Cl. 241-121.000.

Lund, John E.; and High, Wanda B., to Upjohn Company, The. Treatment of osteoporosis with prostaglandins. 4,621,100, Cl. 514-573.000.

Luo, Tatao, to Chevron Research Company. 1-carbalkoxyalkyl-3-aryloxy-4-(substituted-2'-carboxyphenyl)-azet-2-ones as plant growth regulators and herbicides. 4,620,867, Cl. 71-88.000.

Lutigens, Werner, to A. Klebes GmbH & Co. KG Kunstsoff- und Metallwarenfabrik. Device for shaving jacketed sticks. 4,620,558, Cl. 132-79.000.

Luxeord Co., Ltd.: *See—*
Horimoto, Yoshimitsu, 4,620,554, Cl. 131-270.000.

Lycke, Anders H.; and Soderquist, Curt R., to International Business Machines Corporation. Magazine for material and/or tools for robot or like applications. 4,620,754, Cl. 312-330.00R.

Lynch, John M.: *See—*
Woodworth, John L.; and Lynch, John M., 4,620,647, Cl. 222-215.000.

Lynch, Michael P.: *See—*
Beck, James R.; and Lynch, Michael P., 4,620,865, Cl. 71-67.000.

M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See—*
Fischer, Hermann, 4,620,482, Cl. 101-415.100.
Steiner, Gerd, 4,620,481, Cl. 101-350.000.

MacDonald, Paul M., to P.X. Industries, Inc. Universal single roller bracket. 4,620,801, Cl. 384-19.000.

MacGugan, Douglas C.; Leonardson, Ronald B.; and Sand, William W., to Sundstrand Data Control, Inc. Digital accelerometer. 4,620,442, Cl. 73-517.00R.

Machon, Jean-Pierre: *See*—
Neyer, Jean-Marie; Machon, Jean-Pierre; and Bujadoux, Karel, 4,621,124, Cl. 526-125.000.

Macier, James E.: *See*—
Breckenfeld, Paul W.; Broughton, George L.; Macier, James E.; and Gibbs, Ronald E., 4,620,607, Cl. 181-229.000.

MacKirdy, Iain S.: *See*—
Baxter, Paul L.; MacKirdy, Iain S.; and Wright, Christopher T., 4,620,935, Cl. 252-99.000.

MacLeod, William J.: *See*—
Baird, John P.; Linnett, Ian W.; and MacLeod, William J., 4,620,834, Cl. 416-32.000.

Mader, David L.: *See*—
Keyser, Graham M.; Mader, David L.; and O'Neill, James A., 4,620,909, Cl. 204-157.220.

Madi, Jeno : *See*—
Ivony, Jozsef; Madocsay, Attila; Ratsko, Istvan; Horvath, Bela; and Madi, Jeno , 4,620,717, Cl. 280-432.000.

Madocsay, Attila: *See*—
Ivony, Jozsef; Madocsay, Attila; Ratsko, Istvan; Horvath, Bela; and Madi, Jeno , 4,620,717, Cl. 280-432.000.

Madsen, Laurie. Disposable car seat lining. 4,621,004, Cl. 428-80.000.

Maeda, Akira, to Tokyo Shibaura Denki Kabushiki Kaisha. Multiprocessor system having mutual exclusion control function. 4,621,318, Cl. 364-200.000.

Maeda, Kazuyuki: *See*—
Kimura, Fumio; Haga, Takahiro; Maeda, Kazuyuki; Hayashi, Kouji; Seki, Toshio; and Yoshida, Tsunezo, 4,620,868, Cl. 71-90.000.

Maeda, Masahiko; and Watanabe, Naotochi, to Showa Denko Kabushiki Kaisha. Scintillation converter for neutron radiography. 4,620,939, Cl. 252-301.170.

Maeda, Shuichi: *See*—
Imahori, Seiichi; Himeno, Kiyoshi; and Maeda, Shuichi, 4,621,136, Cl. 534-761.000.

Maeda, Yutaka: *See*—
Toriumi, Shiro; Yamagishi, Seiichi; Yamakoshi, Yukiyoshi; Ishii, Kenjiro; and Maeda, Yutaka, 4,621,272, Cl. 346-134.000.

Maehashi, Kiyoshi. Forms such as a notebook and the like. 4,620,725, Cl. 281-45.000.

Maekawa, Yukio; Metabi, Tsuneyo; and Niwa, Masatake, to Minolta Camera Kabushiki Kaisha. Mount arrangement and interchangeable lens unit for photographic camera. 4,620,780, Cl. 354-286.000.

Maeno, Yoshihiro: *See*—
Nagao, Kosuke; Ishii, Shuzo; Shinka, Noriyasu; Maeno, Yoshihiro; and Morita, Naoki, 4,620,677, Cl. 242-107.600.

Magnus, Brigitte: *See*—
Garschke, Adelheid; Tiller, Hans-Jurgen; Gobel, Roland; Magnus, Brigitte; and Oppawsky, Steffen, 4,620,988, Cl. 427-223.000.

Magyari, Istvan: *See*—
Dombay, Zsolt; Grega nee Toth, Erzsebet; Nagy, Jozsef; Pavliscsak, Csaba; Tasi, Laszlo ; Toth, Andras; Toth, Oszkar; Vitanyi, Judit; Bihari, Ferenc; Bohus, Peter; Inczedy, Peter; Magyari, Istvan; Kertesz nee Szabo, Marianna; Wohl, Laszlo ; and Ferenczi, Attila, 4,621,080, Cl. 514-187.000.

Mahajan, Subhash: *See*—
Brasen, Daniel; DiGiuseppe, Michael A.; Lourenco, Jose A.; and Mahajan, Subhash, 4,620,854, Cl. 23-293.00R.

Maier, Horst; and Pahler, Gottfried, to Telefunken Electronic GmbH. Non-evacuated, rapidly coolable housing for an opto-electronic semiconductor component. 4,621,279, Cl. 357-83.000.

Maisch, Wolfgang; and Schafer, Wolfgang, to Robert Bosch GmbH. Apparatus for controlling recirculated exhaust gas quantities in internal combustion engines. 4,620,520, Cl. 123-571.000.

Makinen, Heimo: *See*—
Kahkipuro, Matti; and Makinen, Heimo, 4,621,222, Cl. 318-146.000.

Makino, Tomoaki; Arakawa, Masahiro; and Mitsui, Tomiyoshi, to Honda Giken Kogyo Kabushiki Kaisha. Slidable throttle valve assembly for a carburetor and associated method of operation. 4,620,951, Cl. 261-44.300.

Malhi, Satwinder D. S., to Texas Instruments Incorporated. Buried contacts for N and P channel devices in an SOI-CMOS process using a single N+polycrystalline silicon layer. 4,621,276, Cl. 357-42.000.

Mall, Gunther: *See*—
Dietrich, Herbert; and Mall, Gunther, 4,620,427, Cl. 69-47.000.

Malmgren, Kjell A., to Mo och Domsjo Aktiebolag. Cellulose pulp sampling and cleaning device. 4,620,451, Cl. 73-863.240.

Manca, Joseph J.: *See*—
Fox, Lowell J.; and Manca, Joseph J., 4,621,219, Cl. 315-5.000.

Manner, Reinhard: *See*—
Arntz, Dietrich; Prescher, Gunter; Burkhardt, Werner; Heilos, Johannes; and Manner, Reinhard, 4,621,072, Cl. 502-504.000.

Manring, Gary L.: *See*—
Fawzi, Mahdi B.; and Manring, Gary L., 4,621,075, Cl. 514-32.000.

Manville Corporation: *See*—
Werbowy, Kenneth D., 4,620,860, Cl. 65-3.400.

Marcenac, Philippe: *See*—
Hehlen, Robert; and Marcenac, Philippe, 4,621,261, Cl. 340-825.520.

Margraf, Dallas A.; and Treiber, Fritz F., to Hobart Corporation. Film cutter. 4,620,467, Cl. 83-389.000.

Marin A., Alvaro. Rotary fluid-handling mechanism constructed as an internal combustion engine. 4,620,515, Cl. 123-233.000.

Mark, Victor: *See*—
Hedges, Charles V.; and Mark, Victor, 4,620,950, Cl. 260-505.00R.

Marschner, Heinz: *See*—
Marsland, George E.; Marschner, Heinz; Wiemer, Klaus; Weyer, Thomas; and Knoblauch, Hubert, 4,620,819, Cl. 405-185.000.

Marshall, Daniel Q., to United States of America, Air Force. Bolt frame construction. 4,620,732, Cl. 285-368.000.

Marshall and Williams Company: *See*—
Greene, Charles W.; and Hosmer, Christopher E., 4,620,844, Cl. 474-91.000.

Marsland, George E.; Marschner, Heinz; Wiemer, Klaus; Weyer, Thomas; and Knoblauch, Hubert, to ZF-Herion Systemtechnik GmbH. Submarine working equipment. 4,620,819, Cl. 405-185.000.

Martin, Gerald, to Textron, Inc. Assembly of frames. 4,620,658, Cl. 227-152.000.

Martin, John C.: *See*—
Verheyden, Julien P. H.; Martin, John C.; and McGee, Daniel P. C., 4,621,140, Cl. 544-276.000.

Martin, Roland, to Dr. Ing. H.c.F. Porsche Aktiengesellschaft. Cooling device for disc brakes, especially for automotive vehicles. 4,620,616, Cl. 188-71.600.

Martin, Tammy C.: *See*—
Gatti, John E.; Martin, Tammy C.; Hall, Jack P.; and Fogg, Peter M., 4,620,756, Cl. 339-17.00M.

Marton, Jozsef: *See*—
Grega nee Toth, Erzsebet; Koppany, Eniko ; Bodi, Tibor; Nagy, Jozsef; Dombay, Zsolt; Szarvas, Tibor; Horvath, Laszlo ; Szabo nee Muranyi, Ildiko ; Marton, Jozsef; Pozsar, Bela, Jr.; Viranyi, Sandor; Simon, Peter; Keseru, Jozsef; and Eifert, Jozsef, 4,620,871, Cl. 71-92.000.

Marusan Packing Manufacturing Co.: *See*—
Otomo, Nobuyuki; Chiba, Hiroaki; Uno, Tsuneo; Aono, Toshiki; and Suzuki, Kozo, 4,620,995, Cl. 427-420.000.

Maruyama, Hitoshi: *See*—
Hijikata, Kenichi; Sato, Katsuyuki; Maruyama, Hitoshi; and Furuhashi, Ryoko, 4,620,872, Cl. 75-246.000.

Masui, Tomoyuki: *See*—
Hirabayashi, Hisaaki; Sugimoto, Koichi; Arai, Shinichi; Masui, Tomoyuki; and Inaba, Hidetoshi, 4,620,436, Cl. 73-1.00B.

Mathieu, Bernard: *See*—
Le Gall, Jean C.; and Mathieu, Bernard, 4,621,266, Cl. 342-359.000.

Matis, Louis J., to Zenith Electronics Corporation. Integrated lens and CRT mount for projection TV. 4,621,293, Cl. 358-231.000.

Matsui, Yoshimitsu: *See*—
Horiguchi, Michiyuki; Matsui, Yoshimitsu; and Ohashi, Masakazu, 4,621,367, Cl. 375-36.000.

Matsukawa, Naohiro; Nozawa, Hiroshi; and Morita, Shigeru, to Kabushiki Kaisha Toshiba. Method for producing a semiconductor device with a floating gate. 4,620,361, Cl. 29-571.000.

Matsumoto, Kenzo: *See*—
Aida, Satoshi; Matsumoto, Kenzo; Itoh, Ayao; Suzuki, Yoshinori; and Takamizawa, Kinya, 4,620,546, Cl. 128-660.000.

Matsumoto, Teruo: *See*—
Miyake, Toshio; Hijiya, Hiromi; Suzuki, Shinji; and Matsumoto, Teruo, 4,621,137, Cl. 536-5.000.

Matsumura, Isao, to Canon Kabushiki Kaisha. Ophthalmologic apparatus. 4,620,779, Cl. 351-211.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Hirao, Yoshiaki; Kuga, Ryuichiro; and Nagaoka, Yoshitomi, 4,621,292, Cl. 358-227.000.
Kusunoki, Shigeru; and Nobue, Tomotaka, 4,621,179, Cl. 219-10.55A.
Ueno, Atushi; and Komeda, Tadao, 4,621,275, Cl. 357-30.000.

Matsushita Electric Works, Ltd.: *See*—
Nagamoto, Mitsuki; Nakahata, Atsushi; and Kubota, Takuo, 4,621,246, Cl. 335-78.000.

Matsuura, Ichiro; and Yamaguchi, Fumio, to Nippon Electric Glass Company, Limited. Low temperature sealing composition with synthetic zircon. 4,621,064, Cl. 501-15.000.

Matsuura, Toshitaka: *See*—
Takami, Akio; Matsuura, Toshitaka; Sekiya, Toshifumi; and Kuroki, Yoshiaki, 4,620,437, Cl. 73-23.000.

Matsuyama, Shirohito: *See*—
Nishigaki, Susumu; Yano, Shinsuke; and Matsuyama, Shirohito, 4,621,066, Cl. 501-128.000.

Matthias, Dan W., Jr., to Mothers Work, Inc. Adjustment means and garment. 4,620,326, Cl. 2-221.000.

Maurer Engineering Inc.: *See*—
Nagel, Dave D., 4,620,601, Cl. 175-107.000.

Maurer, Richard P.: *See*—
Holtrop, James S.; and Maurer, Richard P., 4,621,013, Cl. 428-245.000.

Maus, Wolfgang; and Swars, Helmut, to Interatom GmbH. Method for fastening drive elements on a cylindrical shaft. 4,620,356, Cl. 29-432.000.

Mauser-Werke Oberndorf GmbH: *See*—
Bertiller, Roland, 4,620,485, Cl. 102-444.000.

Maximov, Mikhail G.: *See*—
Redikultsev, Jury V.; and Maximov, Mikhail G., 4,621,060, Cl. 435-292.000.

Maxwell, Ian E.: *See*—
Van Der Eijk, Huno; Heinerman, Jacobus J. L.; and Maxwell, Ian E., 4,620,920, Cl. 208-86.000.

May, Jim. Device with distortable opening-defining portion. 4,620,814, Cl. 403-314.000.
Mayes, Gene: *See—*
Parker, Paul, 4,620,462, Cl. 81-462.000.
Mayhew, Steven C., to Digital Equipment Corporation. Message transmission circuitry. 4,621,323, Cl. 364-200.000.
Mazda Motor Corporation: *See—*
Nagao, Akihito; Yoshioka, Sadashichi; Oda, Hiroyuki; and Tokushima, Takashige, 4,620,519, Cl. 123-492.000.
Yamaguchi, Ikuo, 4,620,450, Cl. 73-862.230.
McAdams, Hugh P., to Texas Instruments Incorporated. Low power CMOS fuse circuit. 4,621,346, Cl. 365-227.000.
McClay, Archie R.; Billington, Raymond H.; and Ruckman, Chester W., to Herbert L. Engineering Corp. Automatic rivet-feeding system for reliable delivery of plural rivet sizes. 4,620,656, Cl. 227-5.000.
McDaniel, Larry A., to Gross, Jerome A., a part interest. Nitration processes. 4,621,157, Cl. 564-411.000.
McDonald Products Corporation: *See—*
Herr, Francis V.; Walklet, Thomas B.; Hansen, James G.; Hasler, Theodore J.; Beil, Valentin; Donlon, Harold E.; and Christian, Ken E., 4,620,636, Cl. 211-126.000.
McDowell, Curtis S., to Polybac Corporation. Process for rapidly determining biological toxicity of wastewater. 4,620,930, Cl. 210-614.000.
McEachern, Robert L., to Original Round Effects Company Limited, The. Decorative attachments for wheels. 4,620,749, Cl. 301-37.0SA.
McElvy, Howell T., to Kliklok Corporation. Packaging film feed with parallelogram belt support. 4,620,409, Cl. 53-551.000.
McGee, Daniel P. C.: *See—*
Verheyden, Julien P. H.; Martin, John C.; and McGee, Daniel P. C., 4,621,140, Cl. 544-276.000.
McGovern, Terrence P.; and Burden, George S., to United States of America, Agriculture. Cockroach repellants. 4,621,143, Cl. 546-245.000.
McGurk, Dan L.: *See—*
Kurtin, Stephen; McGurk, Dan L.; Fedele, Daniel E.; and Kelm, Edward C., 4,620,808, Cl. 400-83.000.
McIntosh, Robert P.: *See—*
Baer, James W.; Hoshiko, Henry H.; McIntosh, Robert P.; Reilly, Charles M.; Romano, Paul M.; and Hargarten, James W., 4,621,351, Cl. 369-44.000.
McKendree, Francis S.; and Zomp, John M., to Westinghouse Electric Corp. Portable acoustic intensity measuring device. 4,620,445, Cl. 73-647.000.
McMaster, Harold A., to Glasstech, Inc. Glass sheet tempering utilizing heating and quenching performed in ambient at superatmospheric pressure. 4,620,864, Cl. 65-114.000.
McMillen, Charles J., to General Electric Company. Dual voltage distribution transformer with internal varistor surge protection. 4,621,298, Cl. 361-38.000.
McMillen, Robert J., to Hughes Aircraft Company. Load balancing for packet switching nodes. 4,621,359, Cl. 370-60.000.
McSherry, Thomas W., to Garfield, Nathaniel H., a part interest. Container with integral toggle closure. 4,620,665, Cl. 229-43.000.
Meade, Steven L.: *See—*
Morris, Merle; Meade, Steven L.; and Senft, Stephen P., 4,621,220, Cl. 313-318.000.
Mears, Dana C., to Pfizer Hospital Products Group Inc. External bone fixation apparatus. 4,620,533, Cl. 128-92.00Z.
Meder, Gregg T., to Burroughs Corporation. Twisted pair wire separator. 4,620,573, Cl. 140-123.000.
Medicore Inc.: *See—*
Chiodo, Daniel J.; Shirley, Gaylord R.; and Oquendo, Joseph, 4,620,410, Cl. 53-561.000.
Mediplast AB: *See—*
Ekholmer, Erik, 4,620,564, Cl. 137-595.000.
Mehnert, Volker: *See—*
Temme, Karl; and Mehnert, Volker, 4,620,394, Cl. 51-163.200.
Meidl, John A.; and Vollstedt, Thomas J., to Zimpro Inc. Blowdown pot for a reactor. 4,620,563, Cl. 137-572.000.
Meister, Pierre-Andre : *See—*
Besson, Rene ; and Meister, Pierre-Andre , 4,620,797, Cl. 368-21.000.
Meister, Richard P., to Bunting Magnetics Company. Gated drawer filter. 4,620,923, Cl. 209-223.00R.
Meito Sangyo Kabushiki Kaisha: *See—*
Kuzuya, Fumio; Kito, Kyoji; and Uchida, Hisaaki, 4,621,076, Cl. 514-48.000.
Mekler, Dan. Method and apparatus for reorienting plant precursors during growth. 4,620,390, Cl. 47-58.000.
Melgara, Marcello: *See—*
Capizzi, Giuseppe N.; and Melgara, Marcello, 4,621,342, Cl. 364-900.000.
Melland, Tristan G., to Stainer, David J. Structural member. 4,620,405, Cl. 52-645.000.
Mendoza, Abel, to Dow Chemical Company, The. Brominated hydroxyaromatic compounds. 4,621,159, Cl. 568-726.000.
Menezes, Edgar; and Steinheuser, Peter, to Ethicon, Inc. Ethylene-propylene copolymer sutures. 4,620,542, Cl. 128-335.500.
Meranda, Keith W.: *See—*
Baker, David E.; Kelly, Howard L.; and Meranda, Keith W., 4,620,572, Cl. 140-105.000.
Merck & Co., Inc.: *See—*
Tischler, Allan N.; and Lanza, Thomas J., Jr., 4,621,091, Cl. 514-337.000.
Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
Romer, Michael; Krause, Joachim; Eidenschink, Rudolf; and Weber, Georg, 4,620,938, Cl. 252-299.630.
Merlin Gerin: *See—*
Poncet, Jean-Pierre; Joumard, Michel; Bonneton, Robert; and Chevaleyre, Robert, 4,620,831, Cl. 414-744.00A.
Mero-Raumstruktur GmbH & Co.: *See—*
Schmidek, Reinhard, 4,620,458, Cl. 81-57.280.
Merrell Dow Pharmaceuticals Inc.: *See—*
Frieben, Wolfgang; and Gerhart, Fritz, 4,621,145, Cl. 548-543.000.
Metabi, Tsuneyo: *See—*
Mackawa, Yukio; Metabi, Tsuneyo; and Niwa, Masatake, 4,620,780, Cl. 354-286.000.
Metalquimia S.A.: *See—*
Corominas, Narciso L., 4,620,478, Cl. 99-533.000.
Meybeck, Alain: *See—*
Redziniak, Gerard; and Meybeck, Alain, 4,621,023, Cl. 428-402.200.
Meyer, Charles D.; and Bennett, Bruce A. Gold putt training apparatus. 4,620,708, Cl. 273-192.000.
Meyer, Horst; Wehinger, Egbert; Garthoff, Bernward; and Kazda, Stanislav, to Bayer Aktiengesellschaft. Pyridopyrimidines, pharmaceutical compositions and use. 4,621,082, Cl. 514-212.000.
Meyerson, Robert F.: *See—*
Kumar, Rajendra; and Meyerson, Robert F., 4,621,189, Cl. 235-472.000.
Mezei, Tibor: *See—*
Budai, Zoltan; Mezei, Tibor; Lay nee Konya, Aranka; Petocz, Lujza; Grasser, Katalin; and Orr, Zsuzsanna, 4,621,101, Cl. 514-640.000.
MG Industries: *See—*
Brodbeck, Howard D., 4,620,962, Cl. 422-24.000.
Miale, Joseph N.: *See—*
Chang, Clarence D.; and Miale, Joseph N., 4,620,921, Cl. 208-111.000.
Michaels of Oregon Co.: *See—*
Cook, Clifton L., 4,620,654, Cl. 224-243.000.
Michel, Christian G.; Schachter, Rozalie; Kuck, Mark A.; Baumann, John A.; and Raccah, Paul M., to Stauffer Chemical Company. Monoclinic phosphorus formed from vapor in the presence of an alkali metal. 4,620,968, Cl. 423-299.000.
Michel, Gregory C.: *See—*
Jensen, Jorgen; and Michel, Gregory C., 4,620,446, Cl. 73-652.000.
Michigan State University: *See—*
Pinnavaia, Thomas J.; and Johnson, Ivy D., 4,621,070, Cl. 502-63.000.
Micic, Ljubo; and Zaehringer, Edmund, to ITT Industries, Inc. Circuit arrangement for processing, transmitting, and acoustically reproducing digitized audio-frequency signals. 4,621,374, Cl. 455-603.000.
Mickelson, Thorwald J., to Cargo Protectors, Inc. Kingpin lock. 4,620,718, Cl. 280-507.000.
Micromedical Research and Development Company: *See—*
Goodale, David B., 4,620,540, Cl. 128-303.00B.
Mid-America Dairymen, Inc.: *See—*
Reddy, Malireddy S., 4,621,058, Cl. 435-253.000.
Middleton, William J., to Du Pont de Nemours, E. I., and Company. Group transfer polymerization employing tris(disubstituted amino)-sulfonium perfluorocarbanion salts as catalysts. 4,621,126, Cl. 526-192.000.
Middleton, William J.: *See—*
Farnham, William B.; and Middleton, William J., 4,621,125, Cl. 526-190.000.
Mikas, Raymond: *See—*
Pulciano, Sam C.; Mikas, Raymond; and Wyleta, Robert M., 4,620,434, Cl. 72-347.000.
Miles Laboratories, Inc.: *See—*
Loessel, Mark C.; Miller, Randall W.; and Myers, Robert W., 4,621,204, Cl. 307-311.000.
Wang, Joseph Y., 4,621,049, Cl. 435-14.000.
Millar, Colin A., to British Telecommunications plc. Endface assessment. 4,620,789, Cl. 356-73.100.
Miller, Brian M., to Hewlett-Packard Company. Method and apparatus for reducing varactor noise. 4,621,205, Cl. 307-320.000.
Miller, Daniel A., to Buckhorn Material Handling Group Inc. Tote box with lid container. 4,620,644, Cl. 220-334.000.
Miller, John E., to Parma Corporation. Body support for bed or seat. 4,620,336, Cl. 5-249.000.
Miller, Luitpold; and Raschbichler, Hans G., to Thyssen Industrie AG. Method of securing equipment parts to a trackway supporting structure. 4,620,358, Cl. 29-464.000.
Miller, Randall W.: *See—*
Loessel, Mark C.; Miller, Randall W.; and Myers, Robert W., 4,621,204, Cl. 307-311.000.
Miller, Roland E.; Borgardt, Henry; and Valek, John, to Kraft, Inc. Cheese shredder. 4,620,838, Cl. 425-135.000.
Milupa Aktiengesellschaft: *See—*
Schmidt, Manfred, 4,620,638, Cl. 215-11.00R.
Minakawa, Masaaki: *See—*
Sakata, Mamoru; and Minakawa, Masaaki, 4,620,720, Cl. 280-666.000.
Minami, Akihiro: *See—*
Shinohara, Nobutaka; Minami, Akihiro; and Hirakawa, Shuji, 4,621,280, Cl. 358-22.000.
Minnesota Mining and Manufacturing Company: *See—*
Debe, Mark K., 4,620,963, Cl. 422-240.000.
Guilbert, Curtis R.; and Fialla, Peter, 4,621,122, Cl. 525-422.000.
Vikesland, John P., 4,621,019, Cl. 428-347.000.

Minolta Camera Kabushiki Kaisha: *See*—
Maekawa, Yukio; Metabi, Tsuneyo; and Niwa, Masatake, 4,620,780, Cl. 354-286.000.
Toriumi, Shiro; Yamagishi, Seiichi; Yamakoshi, Yukiyoshi; Ishii, Kenjiro; and Maeda, Yutaka, 4,621,272, Cl. 346-134.000.
Missalla, Manfred. Dismountable reel. 4,620,676, Cl. 242-77.000.
Mita Kogyo Kabushiki Kaisha: *See*—
Kurando, Shigeo; Amakawa, Katsumi; and Kawamori, Yoshizo, 4,620,782, Cl. 355-14.0SH.
Mitsubishi Chemical Industries, Ltd.: *See*—
Imahori, Seiichi; Himeno, Kiyoshi; and Maeda, Shuichi, 4,621,136, Cl. 534-761.000.
Kosuge, Masao; and Fukuda, Junji, 4,621,103, Cl. 521-28.000.
Yoshimura, Tamotsu; Nakamura, Masahiko; and Honma, Ken, 4,621,129, Cl. 528-176.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Fujiwara, Michio; Kazumoto, Yoshio; Nomaguchi, Tamotsu; and Kashiwamura, Kazuo, 4,620,418, Cl. 60-517.000.
Ishii, Mitsuaki; Miyazaki, Masaaki; Nakamura, Noboru; and Kakinuma, Hideo, 4,620,517, Cl. 123-339.000.
Oogaki, Kenji; and Sato, Hiroshi, 4,621,304, Cl. 361-386.000.
Takenaka, Toshio; Sugimoto, Hiroshi; and Yamanaka, Yoshinobu, 4,621,263, Cl. 340-870.070.
Tanaka, Toshinori, 4,621,197, Cl. 290-38.00R.
Uchikawa, Fusaoki; Takeuchi, Morihisa; Shimamoto, Kozo; Miyao, Kunihiko; Momiyama, Kimio; and Watarai, Hisao, 4,621,249, Cl. 338-35.000.
Watanabe, Yuji, 4,621,333, Cl. 364-513.000.
Mitsubishi Gas Chemical Company, Inc.: *See*—
Suzumori, Takeo; Kokubu, Jun; and Kubota, Minoru, 4,620,970, Cl. 423-579.000.
Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See*—
Ishii, Mitsuaki; Miyazaki, Masaaki; Nakamura, Noboru; and Kakinuma, Hideo, 4,620,517, Cl. 123-339.000.
Mitsubishi Kinzoku Kabushiki Kaisha: *See*—
Hijikata, Kenichi; Sato, Katsuyuki; Maruyama, Hitoshi; and Furuhashi, Ryoko, 4,620,872, Cl. 75-246.000.
Mitsubishi Paper Mills, Ltd.: *See*—
Saikawa, Masahiko; Kanada, Eiji; and Endo, Kazunaka, 4,621,041, Cl. 430-204.000.
Mitsubishi Petrochemical Co., Ltd.: *See*—
Aritomi, Mitsutoshi; and Terauchi, Makoto, 4,621,134, Cl. 528-337.000.
Mitsui Petrochemical Industries, Ltd.: *See*—
Watanabe, Junichi, 4,621,114, Cl. 524-451.000.
Mitsui, Tomiyoshi: *See*—
Makino, Tomoaki; Arakawa, Masahiro; and Mitsui, Tomiyoshi, 4,620,951, Cl. 261-44.300.
Mitsui, Tsutomu; Kobayashi, Hideyuki; and Hirosawa, Kouichiro, to Aisin Seiki Kabushikikaisha. Automatic clutch control system. 4,620,624, Cl. 192-0.076.
Mitsukuchi, Yukio; and Hatano, Sakae, to Yamazoki Machinery Works, Ltd. Composite machining lathe. 4,620,363, Cl. 29-568.000.
Mitsuyasu, Kiyoshi: *See*—
Kanda, Motoya; Sato, Yuji; Shincho, Eriko; and Mitsuyasu, Kiyoshi, 4,621,034, Cl. 429-59.000.
Miura, Norio, to Sanyo Electric Co., Ltd.; and Tokyo Sanyo Electric Co., Ltd. Composite film, semiconductor device employing the same and method of manufacturing. 4,621,278, Cl. 357-70.000.
Miya, Shuichi: *See*—
Kawata, Akiho; Morino, Youichiro; Okajima, Harumi; and Miya, Shuichi, 4,621,016, Cl. 428-323.000.
Miyagaki, Hisanori: *See*—
Nishikawa, Mitsuyo; Kurihara, Nobuo; Sato, Yoshio; Watanabe, Atsumi; Higashi, Toshihiko; Miyagaki, Hisanori; Yokogawa, Atsushi; and Shimada, Yoshihiro, 4,620,491, Cl. 110-185.000.
Miyake, Norihisa: *See*—
Tsuchihasi, Akira; Takahashi, Ichirou; and Miyake, Norihisa, 4,620,830, Cl. 414-735.000.
Miyake, Toshio; Hijiya, Hiromi; Suzuki, Shinji; and Matsumoto, Teruo, to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo. Alpha-glycosyl ginsenosides. 4,621,137, Cl. 536-5.000.
Miyamoto, Koichi, to Canon Kabushiki Kaisha. Image processing apparatus for detecting size of the original. 4,620,781, Cl. 355-3.00R.
Miyanaga, Junichi: *See*—
Moritoki, Masato; Fujikawa, Takao; Kitagawa, Kazuo; and Miyanaga, Junichi, 4,620,839, Cl. 425-405.00H.
Miyao, Kunihiko: *See*—
Uchikawa, Fusaoki; Takeuchi, Morihisa; Shimamoto, Kozo; Miyao, Kunihiko; Momiyama, Kimio; and Watarai, Hisao, 4,621,249, Cl. 338-35.000.
Miyasaka, Kenji: *See*—
Kono, Koichi; Mori, Shoichi; Miyasaka, Kenji; and Tabuchi, Jyoichi, 4,620,955, Cl. 264-41.000.
Miyazaki, Koichi: *See*—
Tanaka, Tatsuo; Miyazaki, Koichi; Kuwahara, Eiji; Yamazaki, Masaya; and Morita, Keiichi, 4,620,424, Cl. 62-222.000.
Miyazaki, Masaaki: *See*—
Ishii, Mitsuaki; Miyazaki, Masaaki; Nakamura, Noboru; and Kakinuma, Hideo, 4,620,517, Cl. 123-339.000.
Mizutani, Minoru; and Fukurohata, Yoshihisa, to Oki Electric Industry Co., Ltd. Multi-color printer. 4,621,270, Cl. 346-76.0PH.
Mo och Domsjo Aktiebolag: *See*—
Malmgren, Kjell A., 4,620,451, Cl. 73-863.240.
Mobil Oil Corporation: *See*—
Chang, Clarence D.; and Miale, Joseph N., 4,620,921, Cl. 208-111.000.
Chibnik, Sheldon, 4,621,141, Cl. 544-358.000.
Lu, Pang-Chia, 4,621,014, Cl. 428-216.000.
Lu, Pang-Chia, 4,621,119, Cl. 525-240.000.
Shihabi, David S., 4,621,161, Cl. 585-408.000.
Mochida, Hideyuki, to Hitachi, Ltd. Connector apparatus for connecting high-tension cable. 4,620,763, Cl. 339-94.00R.
Moehrke, Werner: *See*—
Borchard, Ulrich; Mutschler, Ernst; Moehrke, Werner; Voelger, Karl-Dieter; and Wolf, Erwin, 4,621,085, Cl. 514-249.000.
Mojden, Daniel R. Adjustable exercise apparatus. 4,620,701, Cl. 272-63.000.
Molex Incorporated: *See*—
Leonard, Russell J., 4,620,766, Cl. 339-217.00S.
Molins PLC: *See*—
Applegate, Barry G.; and London, William C., 4,620,891, Cl. 156-212.000.
Molzen, Walter W., Jr.: *See*—
Chang, Tai-Hon P.; Coane, Philip J.; Hohn, Fritz-Jurgen; Molzen, Walter W., Jr.; and Zingher, Arthur R., 4,621,232, Cl. 324-158.00R.
Momiyama, Kimio: *See*—
Uchikawa, Fusaoki; Takeuchi, Morihisa; Shimamoto, Kozo; Miyao, Kunihiko; Momiyama, Kimio; and Watarai, Hisao, 4,621,249, Cl. 338-35.000.
Moncrief, Jack W.: *See*—
Popovich, Robert P.; and Moncrief, Jack W., 4,620,845, Cl. 604-28.000.
Mondshine, Thomas C., to Texas United Chemical Corp. Well drilling, workover and completion fluids. 4,620,596, Cl. 166-292.000.
Monick, Frederick R., to Eaton Corporation. Brake shoe adjuster. 4,620,618, Cl. 188-196.0BA.
Monsanto Company: *See*—
Holtrop, James S.; and Maurer, Richard P., 4,621,013, Cl. 428-245.000.
Montedison S.p.A.: *See*—
Di Battista, Piero, 4,621,110, Cl. 524-100.000.
Montefluos S.p.A.: *See*—
Bargigia, Gianangelo; and Scapin, Mauro, 4,620,946, Cl. 252-545.000.
Montres RADO SA: *See*—
Scarinzi, Renato, 4,620,798, Cl. 368-276.000.
Monzen, Takashi: *See*—
Fukusawa, Hiromichi; and Monzen, Takashi, 4,620,965, Cl. 422-46.000.
Mookherjee, Braja D.; Chant, Bernard J.; Evers, William J.; Wilson, Richard A.; Zampino, Michael J.; and Vock, Manfred H., to International Flavors & Fragrances Inc. Mixtures of one or more t-mercapto terpene isomers and α-terpineol, β-phenylethyl alcohol, 3-methyl-1-phenyl-pentanol-5 and/or butanoyl cyclohexane derivatives, organoleptic uses thereof and process for preparing same. 4,620,945, Cl. 252-522.00R.
Moore, Gary L.: *See*—
Kontz, Robert F.; and Moore, Gary L., 4,620,887, Cl. 156-64.000.
Moore, Robert E.: *See*—
Andrews, E. Trent; and Moore, Robert E., 4,620,539, Cl. 128-303.00R.
Moores, Gregory E., to Black & Decker, Inc. Electric mixer with beater eject mechanism. 4,620,796, Cl. 366-344.000.
Morand, Joseph E. D. M., to Norman Wade Company Limited. Support structure for vertical filing systems. 4,620,635, Cl. 211-47.000.
Morel, Didier, to Rhone-Poulenc Sante. Process for removing certain linear isoprene trimers from a mixture of isoprene trimers. 4,621,165, Cl. 585-866.000.
Morgan, Richard A., to Du Pont de Nemours, E. I., and Company Process for copolymerization of tetrafluoroethylene in the presence of a dispersing agent comprising a perfluoroalkoxybenzene sulfonic acid or salt. 4,621,116, Cl. 524-746.000.
Mori, Shoichi: *See*—
Kono, Koichi; Mori, Shoichi; Miyasaka, Kenji; and Tabuchi, Jyoichi, 4,620,955, Cl. 264-41.000.
Morinaga, Shigeki: *See*—
Watabe, Mitsuru; Morinaga, Shigeki; Sugiura, Yasuyuki; and Takahashi, Tadashi, 4,621,224, Cl. 318-594.000.
Morinaka, Hideo: *See*—
Iwata, Kazuo; Takematsu, Tetsuo; Nonaka, Yuji; Nakanishi, Akira; Morinaka, Hideo; Tsuzuki, Kenji; Murakami, Mitsuyuki; and Uotani, Takeshi, 4,621,090, Cl. 514-332.000.
Morino, Youichiro: *See*—
Kawata, Akiho; Morino, Youichiro; Okajima, Harumi; and Miya, Shuichi, 4,621,016, Cl. 428-323.000.
Morita, Hideyo; Akagawa, Tomohiko; and Kita, Yasuo, to Ube Industries, Ltd. Glass fiber reinforced polypropylene compositions comprising crystalline e-p block copolymer graft modified with itaconic anhydride. 4,621,115, Cl. 524-494.000.
Morita, Keiichi: *See*—
Tanaka, Tatsuo; Miyazaki, Koichi; Kuwahara, Eiji; Yamazaki, Masaya; and Morita, Keiichi, 4,620,424, Cl. 62-222.000.
Morita, Mikio: *See*—
Ochiai, Kumi; Horie, Hiromichi; Arima, Itsuo; and Morita, Mikio, 4,620,933, Cl. 252-62.540.
Morita, Naoki: *See*—
Nagao, Kosuke; Ishii, Shuzo; Shinka, Noriyasu; Maeno, Yoshihiro; and Morita, Naoki, 4,620,677, Cl. 242-107.600.

Morita, Shigeru: *See*—
Matsukawa, Naohiro; Nozawa, Hiroshi; and Morita, Shigeru, 4,620,361, Cl. 29-571.000.
Moritoki, Masato; Fujikawa, Takao; Kitagawa, Kazuo; and Miyanaga, Junichi, to Kabushiki Kaisha Kobe Seiko Sho. Heat insulator for hot isostatic pressing apparatus. 4,620,839, Cl. 425-405.00H.
Morris, Arnold M.; and Morris, Kim E., to Westinghouse Electric Corp. Elevator system. 4,620,615, Cl. 187-22.000.
Morris, Gary D., to Lisle Corporation. Shock absorber removing tool. 4,620,360, Cl. 29-566.100.
Morris, Kim E.: *See*—
Morris, Arnold M.; and Morris, Kim E., 4,620,615, Cl. 187-22.000.
Morris, Merle; Meade, Steven L.; and Senft, Stephen P., to GTE Products Corporation. Incandescent lamp having two lead-in conductors sealed within one end thereof. 4,621,220, Cl. 313-318.000.
Moskovich, Jacob, to Vivitar Corporation. Internal focusing lens. 4,620,774, Cl. 350-461.000.
Moskvitin, Valery A.: *See*—
Shishov, Nikolai M.; Zelenetsky, Vladimir E.; Demina, Nadezhda A.; Bondarev, Ivan M.; Cherny, Alexandr N.; Moskvitin, Valery A.; and Rylov, Evgeny E., deceased, 4,620,847, Cl. 604-58.000.
Moss, Ira L. Compact disc in convertible enclosure. 4,620,630, Cl. 206-45.240.
Mothers Work, Inc.: *See*—
Matthias, Dan W., Jr., 4,620,326, Cl. 2-221.000.
Motion Manufacturing, Inc.: *See*—
Cay, Norman S., 4,620,832, Cl. 414-786.000.
Motorola Computer Systems, Inc.: *See*—
Gatti, John E.; Martin, Tammy C.; Hall, Jack P.; and Fogg, Peter M., 4,620,756, Cl. 339-17.00M.
Motorola, Inc.: *See*—
Goodner, Willis R., 4,621,045, Cl. 430-311.000.
Pumo, Joseph, 4,621,202, Cl. 307-241.000.
Vaughn, Herchel A.; and Peterson, Joe W., 4,621,315, Cl. 363-60.000.
Muacevic, Gojko: *See*—
Casals-Stenzel, Jorge; Weber, Karl-Heinz; Walther, Gerhard; Harreus, Albrecht; and Muacevic, Gojko, 4,621.083, Cl. 514-220.000.
Mukaida, Yoshito: *See*—
Okita, Tsutomu; Tsuji, Nobuo; Mukaida, Yoshito; Hashimoto, Hiroshi; Nakagawa, Teruo; Hashimoto, Akiyoshi; and Ogasawara, Takahisa, deceased, 4,621,027, Cl. 428-425.900.
Mulcahy, David L.; and Mulcahy, Gabriella B. Method of producing self-incompatible plants. 4,620,391, Cl. 47-58.000.
Mulcahy, Gabriella B.: *See*—
Mulcahy, David L.; and Mulcahy, Gabriella B., 4,620,391, Cl. 47-58.000.
Muldoon, Douglas P. Golf club straightening device. 4,620,431, Cl. 72-31.000.
Mullard, Bruce A.: *See*—
Lech, Thaddeus, Jr.; and Mullard, Bruce A., 4,620,626, Cl. 192-106.200.
Muller, Daniel: *See*—
Armand, Michel; Muller, Daniel; and Chabagno, Jean-Michel, 4,620,944, Cl. 252-518.000.
Muller, Gunter; Damm, Norbert; and Kuppinger, Gunter, to BMD Badische Maschinenfabrik Durlach GmbH. Apparatus for the compaction of foundry mold material. 4,620,585, Cl. 164-169.000.
Muller-Spath, Gerhard. Process for producing a casting mould and cast members. 4,620,582, Cl. 164-5.000.
Multi-Arc Vacuum Systems, Inc.: *See*—
Bergman, Clark, 4,620,913, Cl. 204-192.00R.
Munson, Gregory J.: *See*—
Black, James A.; and Munson, Gregory J., 4,620,787, Cl. 355-76.000.
Murakami, Eiji: *See*—
Sano, Yasuro; Tanaka, Haruhiko; and Murakami, Eiji, 4,620,497, Cl. 112-453.000.
Murakami, Hideo; and Uetsuki, Haruo, to Ryobi Ltd. Water-depth measuring apparatus for a double bearing type fishing reel. 4,620,371, Cl. 33-129.000.
Murakami, Kakuji: *See*—
Fujii, Tadashi; Murakami, Kakuji; Akutsu, Eiichi; and Aruga, Tamotsu, 4,620,876, Cl. 106-22.000.
Murakami, Mitsuyuki: *See*—
Iwata, Kazuo; Takematsu, Tetsuo; Nonaka, Yuji; Nakanishi, Akira; Morinaka, Hideo; Tsuzuki, Kenji; Murakami, Mitsuyuki; and Uotani, Takeshi, 4,621,090, Cl. 514-332.000.
Murakami, Yuichi; Komuro, Kenichi; Kawai, Taneichi; Terabayashi, Gosaku; and Ohta, Hisatoshi, to Aisin Seiki Kabushikikaisha; and Toyota Jidosha Kabushikikaisha. Load drive control system for a motor vehicle window. 4,621,223, Cl. 318-282.000.
Musil, Edward C.: *See*—
Gladding, Alfred E.; and Musil, Edward C., 4,620,657, Cl. 227-147.000.
Musschoot, Albert, to General Kinematics. Method and apparatus for reclaiming foundry sand. 4,620,586, Cl. 164-253.000.
Musser, Thomas R.: *See*—
Terry, Dennis C.; and Musser, Thomas R., 4,621,006, Cl. 428-116.000.
Muto, Kenkichi: *See*—
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Myers, Donald H.; and Lampman, James A., to Hitco. Method of making a fluted core radome. 4,620,890, Cl. 156-196.000.
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Naftzger, Walter L.; and O'Banon, Charles M., to Information Retrieval Methods, Inc. Method for monitoring receipt and stocking of goods in a direct store delivery. 4,621,325, Cl. 364-406.000.
Nagai, Isao: *See*—
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Nagai, Masaaki, to Fuji Jukogyo Kabushiki Kaisha. System for controlling the ignition timing of an internal combustion engine. 4,620,518, Cl. 123-425.000.
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Nagamoto, Mitsuki; Nakahata, Atsushi; and Kubota, Takuo, to Matsushita Electric Works, Ltd. Polarized electromagnet relay. 4,621,246, Cl. 335-78.000.
Nagao, Akihito; Yoshioka, Sadashichi; Oda, Hiroyuki; and Tokushima, Takashige, to Mazda Motor Corporation. Fuel injection system for internal combustion engine. 4,620,519, Cl. 123-492.000.
Nagao, Kosuke; Ishii, Shuzo; Shinka, Noriyasu; Maeno, Yoshihiro; and Morita, Naoki, to Ashimori Industry Co., Ltd. Seat belt retractor. 4,620,677, Cl. 242-107.600.
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Natarajan, Sesha I.; and Gordon, Eric M., to E. R. Squibb & Sons, Inc. Substituted proline compounds, composition and method of use. 4,621,092, Cl. 514-343.000.
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New, Bernard J., to Advanced Micro Devices, Inc. Method and apparatus for transferring data in parallel from a smaller to a larger register. 4,621,341, Cl. 364-900.000.
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Neyer, Jean-Marie; Machon, Jean-Pierre; and Bujadoux, Karel, to Societe Chimique des Charbonnages-CdF Chimie. Catalyst system for the polymerization of ethylene. 4,621,124, Cl. 526-125.000.
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Nippon Electric Glass Company, Limited: *See*—
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Nippon Shokubai Kagaku Kogyo Co. Ltd.: *See*—
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Nishikawa, Toshio; Imai, Shiro; Yagi, Kenkichi; Yoshida, Yuriko; Shimada, Masato; Nagashima, Junnosuke; and Nakamura, Teruo, to Toray Industries, Inc. Grained artificial leather having good color fastness and dyeing method of ultrafine polyamide fibers. 4,620,852, Cl. 8-515.000.
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Nojima, Kazuhiro; and Takahashi, Mikio, to Kanzaki Paper Mfg. Co., Ltd. Method of producing cast coated paper. 4,620,992, Cl. 427-362.000.
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Pozzebon, Adolfo, 4,620,377, Cl. 36-119.000.
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Sartor, Mariano, 4,620,379, Cl. 36-119.000.

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Nozawa, Masaei; Kamiya, Sigeru; and Iwashita, Shigeo, to Nippon Soken, Inc. Electrostatic filtering device. 4,620,917, Cl. 204-302.000.

Nu, Tsai Y. Sideview mirror with spring-loaded water shield for vehicle. 4,620,777, Cl. 350-582.000.

Nugent, Edward L., to Becton, Dickinson and Company. Blood collection assembly. 4,620,549, Cl. 128-763.000.

O Tray Corporation: *See—*
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O'Banon, Charles M.: *See—*
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Oblander, Kurt; Abthoff, Jorg; Schuster, Hans-Dieter; and Schmidt, Karlwalter, to Daimler-Benz Aktiengesellschaft. Arrangement for measuring the rate of flow of a gaseous or liquid medium through a housing. 4,620,448, Cl. 73-861.710.

O'Brien, Richard A., to Stevens-Arnold, Inc. High-speed switching regulator. 4,621,311, Cl. 363-21.000.

O'Callaghan, Cynthia H.; Ayres, Barry E.; Livermore, David G. H.; Newall, Christopher E.; and Weir, Niall G., to Glaxo Group Limited. Cephalosporin antibiotics. 4,621,081, Cl. 514-206.000.

Ochiai, Kumi; Horie, Hiromichi; Arima, Itsuo; and Morita, Mikio, to Kabushiki Kaisha Toshiba. Deflecting yoke for electromagnetic deflection type cathode-ray tubes and method for manufacturing it. 4,620,933, Cl. 252-62.540.

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Odashima, Hitoshi; Sasaki, Hideaki; Kazui, Shinichi; Shiono, Shigeo; Isshiki, Osamu; and Kawana, Takeshi, to Hitachi, Ltd. Parts-connecting apparatus using solder. 4,620,663, Cl. 228-44.700.

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Ogasawara, Kuniko, legal representative: *See—*
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Ohlin, Tommy, to KemaNord Blekkemi AB. Bipolar finger electrode. 4,620,915, Cl. 204-284.000.

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Okamura, Kazuhiko, to Tokyo Electric Co., Ltd. Floppy disk drive having improved frame means. 4,621,295, Cl. 360-99.000.

O'Kane, Susan. Portable pad for ironing. 4,621,003, Cl. 428-71.000.

Okazaki, Takashi: *See—*
Koide, Masakazu; Okazaki, Takashi; and Asari, Takashi, 4,620,583, Cl. 164-154.000.

Oki Electric Industry Co., Ltd.: *See—*
Mizutani, Minoru; and Fukurohata, Yoshihisa, 4,621,270, Cl. 346-76.0PH.

Okita, Tsutomu; Tsuji, Nobuo; Mukaida, Yoshito; Hashimoto, Hiroshi; Nakagawa, Teruo; Hashimoto, Akiyoshi; and Ogasawara, Takahisa, deceased (by Ogasawara, Kuniko, legal representative), to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,621,027, Cl. 428-425.900.

Okuno, Khoichi: *See—*
Takagishi, Hisao; Kawakami, Kazunori; Kamio, Kunimasa; and Okuno, Khoichi, 4,621,123, Cl. 525-507.000.

Oldham, Ronald C., to Standard Telephones and Cables Public Limited Company. Submarine cable anchored to a repeater housing and method of assembly thereof. 4,621,167, Cl. 174-70.00S.

Olierook, John C. J.: *See—*
Beyersbergen van Henegouwen, Cornelis M.; Koken, Karel G. M.; and Olierook, John C. J., 4,621,297, Cl. 360-132.000.

Oliveau, Patrice: *See—*
Echasseriau, Gilbert; LeFevre, Philippe; and Oliveau, Patrice, 4,621,250, Cl. 338-162.000.

Olympia Werke AG: *See—*
Pokorny, Cornel; and Tillich, Peter, 4,621,340, Cl. 364-900.000.

Olympus Optical Co., Ltd.: *See—*
Ishikawa, Kazumasa, 4,621,209, Cl. 307-511.000.
Kato, Kiichi, 4,621,352, Cl. 369-54.000.
Nishioka, Kimihiko; and Fujimori, Hiroyoshi, 4,621,284, Cl. 358-98.000.

On, Kevin Q., to GTE Communication Systems Corporation. Binary synchronous count and clear bit-slice module. 4,621,370, Cl. 377-106.000.

O'Neil, Alexander G.: *See—*
O'Neil, Alexander G. B., 4,620,544, Cl. 128-352.000.

O'Neil, Alexander G. B., to O'Neil, Alexander G.; and O'Neil, Christine. Vacuum extractor. 4,620,544, Cl. 128-352.000.

O'Neil, Christine: *See—*
O'Neil, Alexander G. B., 4,620,544, Cl. 128-352.000.

O'Neill, James A.: *See—*
Keyser, Graham M.; Mader, David L.; and O'Neill, James A., 4,620,909, Cl. 204-157.220.

Ono, Yoshifumi: *See—*
Tatsuno, Kimio; Kataoka, Keiji; Homma, Yoshifumi; and Ono, Yoshifumi, 4,620,768, Cl. 350-6.800.

Onoda Cement Company, Ltd.: *See—*
Hirata, Akira; Nagayama, Hajime; Watanabe, Akinori; Nitta, Kouji; and Shimaji, Kenji, 4,620,931, Cl. 210-617.000.

Onodera, Takayoshi; and Kagata, Tooru, to Toyota Jidosha Kabushiki Kaisha; and Aisin Seiki Kabushiki Kaisha. Wheel hub clutch assembly. 4,620,622, Cl. 192-36.000.

Onoe, Seizo; and Hattori, Takeshi, to Nippon Telegraph & Telephone Public Corporation. Digital transmission system. 4,621,368, Cl. 375-40.000.

Oogaki, Kenji; and Sato, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Heat radiator assembly. 4,621,304, Cl. 361-386.000.

Oppawsky, Steffen: *See—*
Garschke, Adelheid; Tiller, Hans-Jurgen; Gobel, Roland; Magnus, Brigitte; and Oppawsky, Steffen, 4,620,988, Cl. 427-223.000.

Oppitz, Peter: *See—*
von der Eltz, Hans-Ulrich; and Oppitz, Peter, 4,620,338, Cl. 8-151.000.

Oquendo, Joseph: *See—*
Chiodo, Daniel J.; Shirley, Gaylord R.; and Oquendo, Joseph, 4,620,410, Cl. 53-561.000.
Original Round Effects Company Limited, The: *See—*
McEachern, Robert L., 4,620,749, Cl. 301-37.0SA.
Orr, Alexander F., to Shell Oil Company. 2-azetidineacetic acid and certain of its congeners. 4,620,866, Cl. 71-88.000.
Orr, Edward W., to Dow Chemical Company, The. Zinc-based paints employing a mixture of ether alcohols as liquid organic vehicle. 4,620,873, Cl. 106-1.170.
Orr, Zsuzsanna: *See—*
Budai, Zoltan; Mezei, Tibor; Lay nee Konya, Aranka; Petocz, Lujza; Grasser, Katalin; and Orr, Zsuzsanna, 4,621,101, Cl. 514-640.000.
Osaki, Humio: *See—*
Suzuki, Naoyoshi; Hirose, Tsuneo; and Osaki, Humio, 4,621,054, Cl. 435-69.000.
Ostrander, William J., to Chevron Research Company. Method of attenuating sea ice flexure noise during seismic surveys of permafrost regions involving a precursor aerial and/or satellite mapping step. 4,621,347, Cl. 367-21.000.
Otomo, Nobuyuki; Chiba, Hiroaki; Uno, Tsuneo; Aono, Toshiki; and Suzuki, Kozo, to Marusan Packing Manufacturing Co. Surface coated gasket sheet. 4,620,995, Cl. 427-420.000.
Otsuka, Kan: *See—*
Takahashi, Minoru; Kano, Koichi; and Otsuka, Kan, 4,621,255, Cl. 340-347.0AD.
Otsuka Pharmaceutical Factory, Inc.: *See—*
Suzuki, Naoyoshi; Hirose, Tsuneo; and Osaki, Humio, 4,621,054, Cl. 435-69.000.
Ott, Klaus: *See—*
Canepa, Giacomo; and Ott, Klaus, 4,620,673, Cl. 241-69.000.
Outboard Marine Corporation: *See—*
Breckenfeld, Paul W.; Broughton, George L.; Macier, James E.; and Gibbs, Ronald E., 4,620,607, Cl. 181-229.000.
Overwrap Equipment Corporation: *See—*
Parnes, Melvin G., 4,620,408, Cl. 53-77.000.
Owen, David R.: *See—*
Owen, Lorenzo H., Jr., 4,620,576, Cl. 141-1.000.
Owen, Lorenzo H., Jr., to Owen, David R. Method and apparatus for piercing a container. 4,620,576, Cl. 141-1.00o.
Owens-Corning Fiberglas Corporation: *See—*
Lin, David C. K.; Huey, Larry J.; and Kaveh, Farrokh, 4,620,859, Cl. 65-2.000.
Owens-Illinois, Inc.: *See—*
Kontz, Robert F.; and Moore, Gary L., 4,620,887, Cl. 156-64.000.
Swartzbaugh, Peter T., 4,620,640, Cl. 215-217.000.
Oxford Research Systems Limited: *See—*
Timms, William E., 4,621,237, Cl. 324-322.000.
Oy Partek AB: *See—*
Nordenswan, Erik T., 4,620,577, Cl. 141-98.000.
Ozaki, Toshifumi: *See—*
Takemoto, Iwao; Ohba, Shinya; Aoki, Masakazu; Ando, Haruhisa; Nakai, Masaaki; Ozaki, Toshifumi; and Imaide, Takuya, 4,621,291, Cl. 358-213.000.
P.X. Industries, Inc.: *See—*
MacDonald, Paul M., 4,620,801, Cl. 384-19.000.
Pacal Molded Plastics: *See—*
Bloom, Ted E., 4,620,387, Cl. 43-17.000.
Pace, Incorporated: *See—*
Holdway, John B., 4,620,659, Cl. 228-20.000.
Pacht, Amos, to Butterworth, Inc. High pressure regulator valve. 4,620,562, Cl. 137-315.000.
Padgett, Ray T., to Henry, Patrick F.; and Ness, William G. Hydraulic suspension system for vehicles including adjustable shock absorber unit. 4,620,694, Cl. 267-64.150.
Paez, Juan B.: *See—*
Lanier, Willard E.; and Paez, Juan B., 4,620,530, Cl. 128-75.000.
Pahler, Gottfried: *See—*
Maier, Horst; and Pahler, Gottfried, 4,621,279, Cl. 357-83.000.
Palazzetti, Mario; Re Fiorentin, Stefano; and Tufano, Giovanni, to Fiat Auto S.p.A. Non-destructive quality-testing of a joint between sheets made by electric spot welding. 4,620,799, Cl. 374-5.000.
Palladino, John R., Jr., to Game Concepts, Inc. Board game and method. 4,620,709, Cl. 273-264.000.
Pampalone, Thomas R.; and Di Piazza, James J., to RCA Corporation. Absorptive planarizing layer for optical lithography. 4,621,042, Cl. 430-271.000.
Panmedica: *See—*
Laruelle, Claude; Lepant, Marcel; and Raynier, Bernard, 4,621,088, Cl. 514-300.000.
Paper Applications International, Inc.: *See—*
Wright, Frederick A., 4,621,024, Cl. 428-404.000.
Parfums Christian Dior: *See—*
Redziniak, Gerard; and Meybeck, Alain, 4,621,023, Cl. 428-402.200.
Parker, Paul, to Mayes, Gene, a part interest. Tool for removing truck lug nuts. 4,620,462, Cl. 81-462.000.
Parma Corporation: *See—*
Miller, John E., 4,620,336, Cl. 5-249.000.
Parnes, Melvin G., to Overwrap Equipment Corporation. Orbital stretch wrapping apparatus. 4,620,408, Cl. 53-77.000.
Parr, Ehrfried: *See—*
Strack, Hans; Kleinschmit, Peter; and Parr, Ehrfried, 4,620,399, Cl. 52-172.000.
Parr, Robert G. Neckwrap. 4,620,324, Cl. 2-91.000.
Parrens, Pierre, to Nextral. Apparatus for the plasma treatment of disk-shaped substrates. 4,620,893, Cl. 156-345.000.
Pasteris, Robert J., to Du Pont de Nemours, E. I., and Company. Phenyl-substituted sulfonamides. 4,620,870, Cl. 71-91.000.
Patterson, Dennis E. Hairstylist glove. 4,620,374, Cl. 34-97.000.
Paul, James C.: *See—*
Gielow, Robert L.; and Paul, James C., 4,620,487, Cl. 105-2.00R.
Paulson, Robert T.: *See—*
Sevitsky, Gary S.; Short, Kevin L.; and Paulson, Robert T., 4,621,350, Cl. 369-29.000.
Pavliscsak, Csaba: *See—*
Dombay, Zsolt; Grega nee Toth, Erzsebet; Nagy, Jozsef; Pavliscsak, Csaba; Tasi, Laszlo ; Toth, Andras; Toth, Oszkar; Vitanyi, Judit; Bihari, Ferenc; Bohus, Peter; Inczedy, Peter; Magyari, Istvan; Kertesz nee Szabo, Marianna; Wohl, Laszlo ; and Ferenczi, Attila, 4,621,080, Cl. 514-187.000.
Peck, Paul L., to Archery Designs, Inc. Adjustable grip and trigger bow string release. 4,620,523, Cl. 124-35.00A.
Pector, Scott W.: *See—*
Naiman, Sheldon; and Pector, Scott W., 4,621,357, Cl. 370-58.000.
Peeters, Guido J.: *See—*
Vansant, Etienne; De Bievre, Paul; Peeters, Guido J.; Thijs, Anita; and Verhaert, Ingrid, 4,620,857, Cl. 55-75.000.
Peiffer, Dennis G.: *See—*
Duvdevani, Ilan; Schulz, Donald N.; Kitano, Kissho; and Peiffer, Dennis G., 4,621,111, Cl. 524-107.000.
Pender, Don P.: *See—*
Gurian, Marshall I.; and Pender, Don P., 4,620,894, Cl. 156-345.000.
Penn Plax Plastics, Inc.: *See—*
Goldman, Jerome; Goldman, Marvin; Phillips, Gerald; Goldman, Terry; and Judy, John, 4,620,924, Cl. 210-169.000.
Perenthaler, Egbert: *See—*
Gloss, Erwin; Lotterbach, Gerhard; Perenthaler, Egbert; Schenk, Manfred; van Woudenberg, Jan F.; and Zucker, Udo, 4,620,420, Cl. 60-602.000.
Perkin-Elmer Corporation, The: *See—*
Hufnagel, Robert E., 4,620,790, Cl. 356-124.000.
Theall, C. Earle, Jr.; Ludwig, Hans G.; and Gustin, Michael J., 4,621,242, Cl. 333-17.00M.
Perkins, Thomas K., to Atlantic Richfield Company. Progressive sequence for viscous oil recovery. 4,620,592, Cl. 166-245.000.
Perner, Johannes: *See—*
Denzinger, Walter; Hartmann, Heinrich; Perner, Johannes; and Raubenheimer, Hans-Juergen, 4,621,127, Cl. 526-193.000.
Persson, Jan E. Drill arrangement. 4,620,600, Cl. 175-73.000.
Petersen, Harro; Immel, Gunther; Weiss, Wolfram; Schmidt, Horst; and Busse, Gerd, to BASF Aktiengesellschaft. Preparation of curable etherified aminoplast resins and of surface coating resins. 4,621,133, Cl. 528-252.000.
Peterson, Joe W.: *See—*
Vaughn, Herchel A.; and Peterson, Joe W., 4,621,315, Cl. 363-60.000.
Petinelli, Jean-Claude; and Bertier, Dominique, to Compagnie Francaise de Raffinage; and Acome, Societies Anonyme. Electric cable construction and uses therefor. 4,621,169, Cl. 174-106.0SC.
Petkovic, Dominique, to Office Technique des Trefiles. Wire cooling apparatus for a wire drawing machine. 4,620,433, Cl. 72-286.000.
Petocz, Lujza: *See—*
Budai, Zoltan; Mezei, Tibor; Lay nee Konya, Aranka; Petocz, Lujza; Grasser, Katalin; and Orr, Zsuzsanna, 4,621,101, Cl. 514-640.000.
Petro, William A., Jr. Paint spraying and curing booth. 4,621,187, Cl. 219-358.000.
Pfaff Industriemaschinen GmbH: *See—*
Dietrich, Herbert; and Mall, Gunther, 4,620,427, Cl. 69-47.000.
Pfizer Hospital Products Group Inc.: *See—*
Mears, Dana C., 4,620,533, Cl. 128-92.00Z.
Pfouts, Robert R.; Wunder, John E.; and Nostadt, William, Jr., to United Aircraft Products, Inc. Three fluid heat exchanger with pressure responsive control. 4,620,588, Cl. 165-32.000.
Phillips, Gerald: *See—*
Goldman, Jerome; Goldman, Marvin; Phillips, Gerald; Goldman, Terry; and Judy, John, 4,620,924, Cl. 210-169.000.
Phillips Petroleum Company: *See—*
Delzer, Gary A.; and Kolts, John H., 4,621,162, Cl. 585-651.000.
Kolts, John H., 4,621,163, Cl. 585-653.000.
Stewart, William S.; and Blaesi, John E., 4,621,062, Cl. 436-55.000.
Picandet, Jean A., to Jeumont-Schneider Corporation. Means of transmitting signals along a line while also providing a direct voltage source. 4,621,170, Cl. 370-24.000.
Pierce, Edward J. Hydraulic concentrator. 4,620,689, Cl. 251-7.000.
Pilkington Brothers P.L.C.: *See—*
Griffiths, Arthur, 4,620,627, Cl. 198-580.000.
Pillinger, Keith J.; and Griffith, David S., to Rotalight Limited. Warning light. 4,621,253, Cl. 340-84.000.
Pinnavaia, Thomas J.; and Johnson, Ivy D., to Michigan State University. Pillared interlayered clays and method of preparation. 4,621,070, Cl. 502-63.000.
Pinto, Odile; and Scoazec, Henri, to Commissariat a l'Energie Atomique. Process for the treatment of complex manganese ores, such as marine nodules. 4,620,964, Cl. 423-27.000.
Pitchford, Gary G.; and Pitchford, Steven C. Sportsman's insulated beverage container. 4,620,426, Cl. 62-457.000.
Pitchford, Steven C.: *See—*
Pitchford, Gary G.; and Pitchford, Steven C., 4,620,426, Cl. 62-457.000.

Pithon, Francois. Surgical headrest. 4,620,697, Cl. 269-328.000.
Pittway Corporation: *See—*
Birk, Daniel J., 4,621,225, Cl. 320-21.000.
Plastic Oddities, Inc.: *See—*
Izzi, Lewis B., Sr., 4,620,330, Cl. 4-288.000.
Plempel, Manfred: *See—*
Regel, Erik; Buchel, Karl H.; and Plempel, Manfred, 4,621,095, Cl. 514-383.000.
Plessey Overseas Limited: *See—*
Duncan, William C. W., 4,620,760, Cl. 339-45.00M.
Plyler, Gary M.; and Tisdale, Michael G., to Westvaco Corporation. Ditching machine with offset draft vehicle. 4,620,381, Cl. 37-98.000.
Poirier, Charles J.: *See—*
Wagner, Robert A.; and Poirier, Charles J., 4,621,339, Cl. 364-900.000.
Pokorny, Cornel; and Tillich, Peter, to Olympia Werke AG. Method for construction and display of ideographic characters. 4,621,340, Cl. 364-900.000.
Polaroid Corporation: *See—*
Barton, Derek H. R.; Bronstein-Bonte, Irena Y.; and Taylor, Lloyd D., 4,621,156, Cl. 564-250.000.
Bruder, Alan H., 4,621,035, Cl. 429-152.000.
Viola, Michael S., 4,621,040, Cl. 430-138.000.
Polit, Neil A., to Xerox Corporation. Article transport for printers. 4,620,807, Cl. 400-56.000.
Polk, Gary C., to Wagner Spray Tech Corporation. Blow-by circuit. 4,620,669, Cl. 239-120.000.
Polybac Corporation: *See—*
McDowell, Curtis S., 4,620,930, Cl. 210-614.000.
Polyfab S.A.R.L.: *See—*
Rizk, Jihad F., 4,620,404, Cl. 52-602.000.
Polyzive: *See—*
Livne, Zvi, 4,620,484, Cl. 102-395.000.
Poncet, Jean-Pierre; Joumard, Michel; Bonneton, Robert; and Chevaleyre, Robert, to Merlin Gerin; Ateliers Bouvier; and Allibert. Industrial robot governed by a programmable controller. 4,620,831, Cl. 414-744.00A.
Popovich, Robert P.; and Moncrief, Jack W. Method of peritoneal dialysis involving ultraviolet radiation of dialysis apparatus. 4,620,845, Cl. 604-28.000.
Poppelaars, Adrianus C.: *See—*
Kohaut, Gunter; Weber, Werner; Groenendijk, Herman; Poppelaars, Adrianus C.; and Janssen, Wilhelmus H. J., 4,621,022, Cl. 428-397.000.
Porter, Samuel, Jr.: *See—*
Suss, Naomi R.; and Porter, Samuel, Jr., 4,620,993, Cl. 427-407.100.
Suss, Naomi R.; and Porter, Samuel, Jr., 4,620,994, Cl. 427-407.100.
Portinari, Antonio, to Societa Cavi Pirelli S.p.A. Process and apparatus for inserting optical fibers in helical grooves of a cable core. 4,620,412, Cl. 57-6.000.
Portmann, Plato: *See—*
Bachmann, Heinrich; and Portmann, Plato, 4,620,850, Cl. 8-406.000.
Potard, Claude, to Commissariat a l'Energie Atomique. Process for the treatment of a liquid mass. 4,620,587, Cl. 164-475.000.
Potzas, Peter, to USM Corporation. Pull-type blind-riveting assemblies. 4,620,825, Cl. 411-34.000.
Pournejat, Mostafa: *See—*
Chamberlin, Richard A.; and Pournejat, Mostafa, 4,620,903, Cl. 204-4.000.
Powell, Robert C., to Weinschel Engineering Co., Inc. Apparatus and method for determining an input electrical characteristic of a device under test. 4,621,226, Cl. 324-58.00B.
Pozsar, Bela, Jr.: *See—*
Grega nee Toth, Erzsebet; Koppany, Eniko ; Bodi, Tibor; Nagy, Jozsef; Dombay, Zsolt; Szarvas, Tibor; Horvath, Laszlo ; Szabo nee Muranyi, Ildiko ; Marton, Jozsef; Pozsar, Bela, Jr.; Viranyi, Sandor; Simon, Peter; Keseru, Jozsef; and Eifert, Jozsef, 4,620,871, Cl. 71-92.000.
Pozzebon, Adolfo, to Nordica S.p.A. Device for actuating a foot instep presser particularly in ski boots. 4,620,377, Cl. 36-119.000.
PPG Industries, Inc.: *See—*
Suss, Naomi R.; and Porter, Samuel, Jr., 4,620,993, Cl. 427-407.100.
Suss, Naomi R.; and Porter, Samuel, Jr., 4,620,994, Cl. 427-407.100.
Pratt, Donna K.: *See—*
Terrell, Jamie B.; and Pratt, Donna K., 4,620,591, Cl. 166-63.000.
Preformed Line Products Company: *See—*
Goetter, Erwin H., 4,620,815, Cl. 403-405.100.
Prescher, Gunter: *See—*
Arntz, Dietrich; Prescher, Gunter; Burkhardt, Werner; Heilos, Johannes; and Manner, Reinhard, 4,621,072, Cl. 502-504.000.
Presley, John R.: *See—*
Dodson, Michael G.; and Presley, John R., 4,620,892, Cl. 156-319.000.
Prigent, Michel: *See—*
Blanchard, Gilbert; and Prigent, Michel, 4,621,071, Cl. 502-302.000.
Printzen, Helmut: *See—*
Burow, Wilfried; Printzen, Helmut; Brunn, Horst; and Nollen, Klaus, 4,620,879, Cl. 106-304.000.
Pro-Catalyse: *See—*
Blanchard, Gilbert; and Prigent, Michel, 4,621,071, Cl. 502-302.000.
Procter & Gamble Company, The: *See—*
Fawzi, Mahdi B.; and Manring, Gary L., 4,621,075, Cl. 514-32.000.
Productive Instrument & Machine, Inc.: *See—*
Kopesky, Albert B., 4,620,428, Cl. 70-175.000.
Proengin: *See—*
Clausin, Pierre, 4,620,498, Cl. 114-106.000.
Professional Medical Products, Inc.: *See—*
Reed, Albert D.; and Sottak, Paul E., 4,620,698, Cl. 269-328.000.
Prototyp-Werke GmbH: *See—*
Roth, Dieter, 4,620,821, Cl. 407-1.000.
Protype Corporation: *See—*
Kurtin, Stephen; McGurk, Dan L.; Fedele, Daniel E.; and Kelm, Edward C., 4,620,808, Cl. 400-83.000.
Pryor, Timothy R. Electro-optical and robotic casting quality assurance. 4,620,353, Cl. 29-407.000.
Publishers Equipment Corporation: *See—*
Hermach, Carl J., 4,620,480, Cl. 101-179.000.
Puhler, Alfred; Wohlleben, Wolfgang; and Leineweber, Michael, to Hoechst Aktiengesellschaft. Plasmid p SG 2 and process for its preparation. 4,621,061, Cl. 435-320.000.
Pulciano, Sam C.; Mikas, Raymond; and Wyleta, Robert M., to National Can Corporation. Domer assembly for container-forming apparatus. 4,620,434, Cl. 72-347.000.
Pulkowski, Jeffrey H.; and Siler, Steven J., to Beloit Corporation. Inductor configuration for eddy current heating in the papermaking process. 4,621,177, Cl. 219-10.49A.
Pullens, Glenn B. Shutter masking mats. 4,620,503, Cl. 118-505.000.
Pullman Standard: *See—*
Gielow, Robert L.; and Paul, James C., 4,620,487, Cl. 105-2.00R.
Pumo, Joseph, to Motorola, Inc. Bi-directional bus isolation circuit. 4,621,202, Cl. 307-241.000.
Purcell, Robert H.: *See—*
Daemer, Richard J.; Feinstone, Stephen M.; Gust, Ian D.; and Purcell, Robert H., 4,620,978, Cl. 424-89.000.
Purdue Research Foundation: *See—*
Chang, Martin M.; Tsao, George T.; and Anderson, Allen W., 4,621,164, Cl. 585-733.000.
Pusch, Gunter. Camouflage net having a semiconductive layer. 4,621,012, Cl. 428-242.000.
Quack, Jochen M.; Reng, Alwin; Skrypzak, Werner; and Kunz, Walter, to Hoechst Aktiengesellschaft. Pearlescent dispersion with good flow properties and a low surfactant content. 4,620,976, Cl. 424-70.000.
Quaker Oats Company, The: *See—*
Gordon, Warren A.; Hempenius, Walter L.; and Kirkwood, James R., 4,620,981, Cl. 426-448.000.
Quang, Dang Vu; Raimbault, Claude; Bonifay, Regis; and Le Page, Jean-Francois, to Institut Francais du Petrole. Process for manufacturing synthesis gas by indirect oxidation of hydrocarbons. 4,620,940, Cl. 252-373.000.
Quillen, John D. Cycle lock. 4,620,429, Cl. 70-383.000.
Quinn, Clayton B.; and Hilakos, William, to General Electric Company. Branched copolyester-carbonate resins. 4,621,132, Cl. 528-194.000.
R. Alkan & Cie: *See—*
Hasquenoph, Jean, deceased; and Coutin, Pierre F., 4,620,680, Cl. 244-137.00A.
R. G. Barry Corporation: *See—*
Ganon, Michael H., 4,620,495, Cl. 112-262.100.
Rabe, Jurgen, to INA Walzlager Schaeffler KG. Cage. 4,620,806, Cl. 384-572.000.
Raccah, Paul M.: *See—*
Michel, Christian G.; Schachter, Rozalie; Kuck, Mark A.; Baumann, John A.; and Raccah, Paul M., 4,620,968, Cl. 423-299.000.
Raimbault, Claude: *See—*
Quang, Dang Vu; Raimbault, Claude; Bonifay, Regis; and Le Page, Jean-Francois, 4,620,940, Cl. 252-373.000.
Rand, Roy E., to Imatron, Inc. Electron gun. 4,621,213, Cl. 313-237.000.
Raschbichler, Hans G.: *See—*
Miller, Luitpold; and Raschbichler, Hans G., 4,620,358, Cl. 29-464.000.
Rasper, Susan M.: *See—*
Casper, Thomas J.; and Rasper, Susan M., 4,620,927, Cl. 210-236.000.
Ratsko, Istvan: *See—*
Ivony, Jozsef; Madocsay, Attila; Ratsko, Istvan; Horvath, Bela; and Madi, Jeno , 4,620,717, Cl. 280-432.000.
Raubenheimer, Hans-Juergen: *See—*
Denzinger, Walter; Hartmann, Heinrich; Perner, Johannes; and Raubenheimer, Hans-Juergen, 4,621,127, Cl. 526-193.000.
Rawlins, Joan E., to Docutel/Olivetti Corporation. Method of reducing customer transaction time in an automatic teller machine by parallel processing of sequence events. 4,621,326, Cl. 364-408.000.
Ray, Siba P.: *See—*
Tarcy, Gary P.; Gavasto, Thomas M.; and Ray, Siba P., 4,620,905, Cl. 204-64.00R.
Raynier, Bernard: *See—*
Laruelle, Claude; Lepant, Marcel; and Raynier, Bernard, 4,621,088, Cl. 514-300.000.
RCA Corporation: *See—*
Bloom, Stanley; and Hockings, Eric F., 4,621,214, Cl. 313-402.000.
Fling, Russell T., 4,621,290, Cl. 358-166.000.
Koon, Ooi T., 4,620,366, Cl. 29-762.000.
Pampalone, Thomas R.; and Di Piazza, James J., 4,621,042, Cl. 430-271.000.
Reitmeier, Glenn A.; and Carlson, Curtis R., 4,621,286, Cl. 358-141.000.
Reitmeier, Glenn A.; and Carlson, Curtis R., 4,621,287, Cl. 358-141.000.
Wardell, Myron H., Jr., 4,620,764, Cl. 339-145.00T.

Reddy, Malireddy S., to Mid-America Dairymen, Inc. Method of preparing cheese starter media. 4,621,058, Cl. 435-253.000.
Redikultsev, Jury V.; and Maximov, Mikhail G., to Institut Biokhimii I Fiziologii Mikroorganizmov Akademii Nauk SSSR. Apparatus for taking samples from a fermenter. 4,621,060, Cl. 435-292.000.
Redziniak, Gerard; and Meybeck, Alain, to Parfums Christian Dior. Method of homogenizing dispersions of hydrated lipidic lamellar phases and suspensions obtained by the said method. 4,621,023, Cl. 428-402.200.
Reed, Albert D.; and Sottak, Paul E., to Professional Medical Products, Inc. Orthopedic support device. 4,620,698, Cl. 269-328.000.
Reeder, Frank F. Disposable fire extinguisher. 4,620,598, Cl. 169-30.000.
Reeves, Allen R.; and Carson, Charles F., to Blue Bell, Inc. Articulated tow vehicle. 4,620,603, Cl. 180-19.100.
Re Fiorentin, Stefano: *See—*
Palazzetti, Mario; Re Fiorentin, Stefano; and Tufano, Giovanni, 4,620,799, Cl. 374-5.000.
Regel, Erik; Buchel, Karl H.; and Plempel, Manfred, to Bayer Aktiengesellschaft. Substituted tert.-butanol derivatives and antimycotic agents containing these compounds. 4,621,095, Cl. 514-383.000.
Reilly, Charles M.: *See—*
Baer, James W.; Hoshiko, Henry H.; McIntosh, Robert P.; Reilly, Charles M.; Romano, Paul M.; and Hargarten, James W., 4,621,351, Cl. 369-44.000.
Reiners, Lawrence L.: *See—*
Holste, Daniel D.; and Reiners, Lawrence L., 4,621,320, Cl. 364-200.000.
Reinking, Klaus: *See—*
Wingler, Frank; Koch, Otto; Lindner, Christian; and Reinking, Klaus, 4,621,117, Cl. 525-67.000.
Reinschmidt, Robert: *See—*
Amdahl, Carlton G.; Amdahl, Gene M.; and Reinschmidt, Robert, 4,621,201, Cl. 307-219.000.
Reitmeier, Glenn A.; and Carlson, Curtis R., to RCA Corporation. Spatial-temporal frequency interleaved processing of a television signal with reduced amplitude interleaved sections. 4,621,286, Cl. 358-141.000.
Reitmeier, Glenn A.; and Carlson, Curtis R., to RCA Corporation. Time-multiplexing of an interleaved spectrum of a television signal. 4,621,287, Cl. 358-141.000.
Relyea, Robert G., to RGR Services, Inc. Dual communication headset. 4,621,372, Cl. 455-74.000.
Remmel, Hans: *See—*
Schwarze, Werner; Wolff, Siegfried; Remmel, Hans; and Lambertz, Horst, 4,621,121, Cl. 525-329.300.
Reng, Alwin: *See—*
Quack, Jochen M.; Reng, Alwin; Skrypzak, Werner; and Kunz, Walter, 4,620,976, Cl. 424-70.000.
Rengo Co., Ltd.: *See—*
Sueki, Hiroshi; and Yufu, Kuniaki, 4,620,896, Cl. 156-471.000.
Renix Electronique: *See—*
Echasseriau, Gilbert; LeFevre, Philippe; and Oliveau, Patrice, 4,621,250, Cl. 338-162.000.
Rensselaer Polytechnic Institute: *See—*
Davari, Bijan; and Das, Pankaj, 4,621,233, Cl. 324-158.00R.
Tomozawa, Minoru; Watson, E. Bruce; and Acocella, John, 4,620,863, Cl. 65-30.120.
Research Dynamics Incorporated: *See—*
Anno, James N., 4,620,800, Cl. 374-132.000.
Ressel, Herbert: *See—*
Schimmel, Gunther; Ressel, Herbert; Heymer, Gero; and Gradl, Reinhard, 4,620,966, Cl. 423-185.000.
Reum, Helmut; Frey, Thomas; Grunwald, Werner; Imhof, Ernst; Komaroff, Iwan; Schmid, Gunther; and Schmid, Kurt, to Robert Bosch GmbH. Apparatus for injecting fuel into combustion chambers of internal combustion engines, in particular self-igniting internal combustion engines. 4,620,516, Cl. 123-275.000.
Reynolds, Gregory E., to Boeing Company, The. Changeable tooling system for robot end-effector. 4,620,362, Cl. 29-568.000.
RGR Services, Inc.: *See—*
Relyea, Robert G., 4,621,372, Cl. 455-74.000.
Rhone-Poulenc Sante: *See—*
Morel, Didier, 4,621,165, Cl. 585-866.000.
Rhone-Poulenc Specialites Chimiques: *See—*
Desbois, Michel; and Disdier, Camille, 4,621,160, Cl. 570-207.000.
Richard, Pierre, to Bouygues. Prestressed concrete structure, a method of producing this structure, and elements for implementing the method. 4,620,400, Cl. 52-227.000.
Richard Wolf GmbH: *See—*
Boebel, Manfred, 4,620,547, Cl. 128-754.000.
Richards Medical Company: *See—*
Heppenstall, R. Bruce; and Shenton, David W., 4,620,543, Cl. 128-419.00F.
Richmond Metal Finishers, Inc.: *See—*
Robinson, W. W., 4,621,026, Cl. 428-422.000.
Ricoh Company, Ltd.: *See—*
Fujii, Tadashi; Murakami, Kakuji; Akutsu, Eiichi; and Aruga, Tamotsu, 4,620,876, Cl. 106-22.000.
Fujioka, Yoshisato, 4,620,775, Cl. 350-449.000.
Shimada, Masaru; and Sasaki, Masaomi, 4,620,875, Cl. 106-22.000.
Yamashita, Hiroshi; and Muto, Kenkichi, 4,620,987, Cl. 427-131.000.
Yuasa, Kazuhiro, 4,621,274, Cl. 346-153.100.
Rigby, Robert B. Curb and gutter machine. 4,620,341, Cl. 15-339.000.
Riken Corporation: *See—*
Sugiuchi, Toshiyasu; Aoyama, Susumu; and Yoshida, Toshio, 4,620,454, Cl. 74-567.000.
Ripani, Sergio; and Serafini, Giulio, to Carle & Montanari S.p.A. Control system for controlling the pressure on chocolate refining machine roll bearings. 4,620,477, Cl. 99-486.000.
Ritter, Russell F. Incontinent bed facility. 4,620,333, Cl. 5-90.000.
Rizk, Jihad F., to Polyfab S.A.R.L. Building panel. 4,620,404, Cl. 52-602.000.
Roberge, Gerald; Gavrilovic, Momcilo; and Felletier, Pierre, to Hydro-Quebec. Method and system for interconnecting two synchronous or asynchronous electrical alternating three-phase networks by means of variable reactive impedances. 4,621,198, Cl. 307-82.000.
Robert Bosch GmbH: *See—*
Burger, Kurt; and Gruner, Heiko, 4,620,365, Cl. 29-610.0SG.
Gloss, Erwin; Lotterbach, Gerhard; Perenthaler, Egbert; Schenk, Manfred; van Woudenberg, Jan F.; and Zucker, Udo, 4,620,420, Cl. 60-602.000.
Leiber, Heinz, 4,620,750, Cl. 303-114.000.
Maisch, Wolfgang; and Schafer, Wolfgang, 4,620,520, Cl. 123-571.000.
Reum, Helmut; Frey, Thomas; Grunwald, Werner; Imhof, Ernst; Komaroff, Iwan; Schmid, Gunther; and Schmid, Kurt, 4,620,516, Cl. 123-275.000.
Weber, Walter, 4,621,307, Cl. 362-66.000.
Robinson, Alec. Infant rocker. 4,620,334, Cl. 5-108.000.
Robinson, W. W., to Richmond Metal Finishers, Inc. Process for providing metallic articles and the like with wear-resistant coatings, and improved coated metallic articles and the like. 4,621,026, Cl. 428-422.000.
Rocket Research Company: *See—*
Schmidt, Eckart W., 4,620,415, Cl. 60-219.000.
Rockwell International Corporation: *See—*
Weber, James L., 4,620,617, Cl. 188-196.0BA.
Roesch, Androniki: *See—*
Umminger, Robert; Friebe, Walter-Gunar; Kampe, Wolfgang; Roesch, Androniki; and Wilhelms, Otto-Henning, 4,621,098, Cl. 514-562.000.
Rohm GmbH Chemische Fabrik: *See—*
Borchard, Ulrich; Mutschler, Ernst; Moehrke, Werner; Voelger, Karl-Dieter; and Wolf, Erwin, 4,621,085, Cl. 514-249.000.
Rokugawa, Kyuji, to Kabushiki Kaisha Toshiba. Apparatus for measuring velocity of enzyme reaction. 4,621,059, Cl. 435-291.000.
Romano, Paul M.: *See—*
Baer, James W.; Hoshiko, Henry H.; McIntosh, Robert P.; Reilly, Charles M.; Romano, Paul M.; and Hargarten, James W., 4,621,351, Cl. 369-44.000.
Romer, Michael; Krause, Joachim; Eidenschink, Rudolf; and Weber, Georg, to Merck Patent Gesellschaft mit beschrankter Haftung. Hydroterphenyls. 4,620,938, Cl. 252-299.630.
Roquette Freres: *See—*
Bodele, Gilbert; Duflot, Pierrick; Valentin, Bernard; and Huchette, Michel, 4,620,880, Cl. 127-60.000.
Serpelloni, Michel, 4,620,982, Cl. 426-658.000.
Rosenberg, Harvey S.; and Genco, Joseph M., to Industrial Resources, Inc. Air pollution control process and apparatus. 4,620,856, Cl. 55-73.000.
Rosenquist, Niles R., to General Electric Company. Copolyester-carbonate resins with improved mold release properties. 4,621,130, Cl. 528-176.000.
Rosini, Sergio; and Staibano, Giorgio, to Istituto Gentili S.p.A. Pharmacologically active biphosphonates, process for the preparation thereof and pharmaceutical compositions therefrom. 4,621,077, Cl. 514-108.000.
Rossignol, Alain: *See—*
Vialars, Jacques; Rossignol, Alain; Vidal, Andre ; and Sarrade, Lionel, 4,620,693, Cl. 254-335.000.
Rosson, William M.; and Dean, William G., to Conwood Corporation. Loose leaf chewing tobacco. 4,620,556, Cl. 131-313.000.
Rotalight Limited: *See—*
Pillinger, Keith J.; and Griffith, David S., 4,621,253, Cl. 340-84.000.
Roth, Dieter, to Prototyp-Werke GmbH. Cutting device for cutting honeycomb light constructions. 4,620,821, Cl. 407-1.000.
Rotor Tool Company, The: *See—*
Borries, John A.; Rush, Earl E.; and Washeim, William S., 4,620,449, Cl. 73-862.210.
Roush, David M., to FMC Corporation. Pesticidal vinyl phosphoric esters. 4,621,078, Cl. 514-127.000.
Rowe, Neal E., to Westinghouse Electric Corp. Control center with wedge and jaw connector for distributing electric power. 4,621,303, Cl. 361-338.000.
Rubio, Manuel J.; and de la Vega, Alberto, to Gonzales Barrera, Roberto. Materials handling apparatus. 4,620,826, Cl. 414-73.000.
Ruckman, Chester W.: *See—*
McClay, Archie R.; Billington, Raymond H.; and Ruckman, Chester W., 4,620,656, Cl. 227-5.000.
Runzi, Kurt. Dual sheet feeder for typewriters or output printers. 4,620,809, Cl. 400-624.000.
Rupert, Steven L.: *See—*
Bukamier, Gary L.; and Rupert, Steven L., 4,620,918, Cl. 204-403.000.
Ruppert, Heinrich W.; and Gatschmann, Klaus, to Efka-Werke Fritz Kiehn GmbH. Apparatus for manually filling cigarette tubes. 4,620,551, Cl. 131-75.000.

Rush, Earl E.: *See—*
Borries, John A.; Rush, Earl E.; and Washeim, William S., 4,620,449, Cl. 73-862.210.

Rushing, Bendel S. Apparatus for sealing pipe flanges. 4,620,731, Cl. 285-363.000.

Rusk, Stanley J., to Lockheed Missiles & Space Company, Inc. Apparatus for measuring rate of angular displacement. 4,621,256, Cl. 340-347.00P.

Russow, Jurgen: *See—*
Tetzlaff, Karl-Heinz; Schmid, Dieter; and Russow, Jurgen, 4,620,902, Cl. 204-1.00R.

Rutledge, Sharon K.: *See—*
Banks, Bruce A.; and Rutledge, Sharon K., 4,620,898, Cl. 156-643.000.

Rybakova, Nina Alexeevna, administratrix: *See—*
Shishov, Nikolai M.; Zelenetsky, Vladimir E.; Demina, Nadezhda A.; Bondarev, Ivan M.; Cherny, Alexandr N.; Moskvitin, Valery A.; and Rylov, Evgeny E., deceased, 4,620,847, Cl. 604-58.000.

Ryder, Francis E.; and Williams, Fred E., to Ryder International Corporation. Method for tinting soft contact lenses. 4,620,851, Cl. 8-507.000.

Ryder International Corporation: *See—*
Ryder, Francis E.; and Williams, Fred E., 4,620,851, Cl. 8-507.000.

Rylov, Evgeny E., deceased: *See—*
Shishov, Nikolai M.; Zelenetsky, Vladimir E.; Demina, Nadezhda A.; Bondarev, Ivan M.; Cherny, Alexandr N.; Moskvitin, Valery A.; and Rylov, Evgeny E., deceased, 4,620,847, Cl. 604-58.000.

Ryobi Ltd.: *See—*
Murakami, Hideo; and Uetsuki, Haruo, 4,620,371, Cl. 33-129.000.
Narazaki, Toshiharu, 4,620,734, Cl. 292-142.000.

S. C. Johnson & Son, Inc.: *See—*
Crapser, James R., 4,620,646, Cl. 222-153.000.

Sagami Chemical Research Center: *See—*
Hirai, Kenji; Fuchikami, Takamasa; Hirose, Hiroaki; and Ojima, Iwao, 4,621,150, Cl. 560-51.000.

Sagiv, Oded: *See—*
Landa, Benzion; Sagiv, Oded; and Levy, Nathan A., 4,620,699, Cl. 271-245.000.

Sagucio, Esteban N. Selective flusher for water closet. 4,620,331, Cl. 4-325.000.

Saikawa, Masahiko; Kanada, Eiji; and Endo, Kazunaka, to Mitsubishi Paper Mills, Ltd. Lithographic printing plate. 4,621,041, Cl. 430-204.000.

Saiki, Kazuyuki: *See—*
Hanyu, Susumu; Takenoya, Hideaki; and Saiki, Kazuyuki, 4,620,810, Cl. 400-689.000.

Saito, Hiromichi; Arata, Hiroto; Kimura, Kazuo; Fujisawa, Kazuo; and Yamamoto, Fumihiro. Stave cooler. 4,620,507, Cl. 122-6.00B.

Saito, Junya: *See—*
Yamada, Hisafumi; Kuriki, Choei; and Saito, Junya, 4,621,288, Cl. 358-153.000.

Saito, Tamio; Kobayashi, Hiroshi; and Hori, Shigekazu, to Kabushiki Kaisha Toshiba. Card with an IC module, 4,621,190, Cl. 235-492.000.

Sakaguchi, Shiro, to Kawasaki Jukogyo Kabushiki Kaisha. Front fender of motorcycle. 4,620,713, Cl. 280-152.300.

Sakai, Otoya: *See—*
Kumakura, Masumi; Kawashima, Takeshi; and Sakai, Otoya, 4,620,678, Cl. 242-195.000.

Sakamaki, Hiroshi; Horikoshi, Yukio; and Yanagihashi, Kikuji, to Nippon Piston Ring Co., Ltd. Vane-type rotary compressor having a sleeve for rotation with vanes. 4,620,837, Cl. 418-173.000.

Sakata, Mamoru; and Minakawa, Masaaki, to Honda Giken Kogyo Kabushiki Kaisha. Strut type suspension for automobile. 4,620,720, Cl. 280-666.000.

Sakaue, Shiyuki: *See—*
Sugimoto, Koichi; Hirabayashi, Hisaaki; Arai, Shinichi; and Sakaue, Shiyuki, 4,621,332, Cl. 364-513.000.

Sakura Color Products Corporation: *See—*
Yoshikawa, Kimio; Fukuo, Hidetoshi; and Kuroda, Juzo, 4,620,941, Cl. 252-408.100.

Sallis, Daniel V. Apparatus for tensioning a heliostat membrane. 4,620,382, Cl. 38-102.200.

Sameshima, Tadanori; and Kakigi, Akito, to Honshu Seishi Kabushiki Kaisha. Apparatus for supplying flat sheets such as pulp sheets. 4,620,827, Cl. 414-114.000.

Samuel Strapping Systems Ltd.: *See—*
Heath, James E., 4,620,884, Cl. 148-128.000.

Sand, William W.: *See—*
MacGugan, Douglas C.; Leonardson, Ronald B.; and Sand, William W., 4,620,442, Cl. 73-517.00R.

Sanden Corporation: *See—*
Koisuka, Mikio; and Aoki, Hisao, 4,620,590, Cl. 165-150.000.

Sander, Willy M., to Dictaphone Corporation. Microcassette changer and printer apparatus. 4,621,349, Cl. 369-25.000.

Sandow, Jurgen K.: *See—*
Friedrich, Axel; Konig, Wolfgang; Teetz, Volker; Geiger, Rolf; and Sandow, Jurgen K., 4,621,073, Cl. 514-11.000.

Sanger-Nelken Enterprises: *See—*
Sanger, Sampson D., 4,620,737, Cl. 294-19.100.

Sanger, Sampson D., to Sanger-Nelken Enterprises. Manually operable personal convenience implement. 4,620,737, Cl. 294-19.100.

Sano, Shunichi: *See—*
Gotou, Mineo; and Sano, Shunichi, 4,621,371, Cl. 378-34.000.

Sano, Yasuro; Tanaka, Haruhiko; and Murakami, Eiji, to Janome Sewing Machine Co., Ltd. Device for initially setting a computerized sewing machine. 4,620,497, Cl. 112-453.000.

Sansyu Sangyo Kabushiki Kaisha: *See—*
Imagawa, Masami, 4,620,388, Cl. 43-130.000.

Santilli, Arthur A.: *See—*
Scotese, Anthony C.; Santilli, Arthur A.; and Strike, Donald P., 4,621,142, Cl. 546-198.000.

Sanyo Electric Co., Ltd.: *See—*
Miura, Norio, 4,621,278, Cl. 357-70.000.
Tsutsumi, Masaru; Hagino, Hideo; and Fujiwara, Osamu, 4,621,033, Cl. 429-12.000.

Sarrade, Lionel: *See—*
Vialars, Jacques; Rossignol, Alain; Vidal, Andre ; and Sarrade, Lionel, 4,620,693, Cl. 254-335.000.

Sartor, Mariano, to Nordica S.p.A. Ski boot incorporating a foot securing device. 4,620,378, Cl. 36-119.000.

Sartor, Mariano, to Nordica S.p.A. Ski boot, particularly of the rear entrance type, incorporating a closure and foot securing device. 4,620,379, Cl. 36-119.000.

Sasaki, Hideaki: *See—*
Odashima, Hitoshi; Sasaki, Hideaki; Kazui, Shinichi; Shiono, Shigeo; Isshiki, Osamu; and Kawana, Takeshi, 4,620,663, Cl. 228-44.700.

Sasaki, Masaomi: *See—*
Shimada, Masaru; and Sasaki, Masaomi, 4,620,875, Cl. 106-22.000.

Sato, Atsushi; Endo, Keiji; Kawakami, Shigenobu; Yanagishita, Hitoshi; and Hayashi, Shozo, to Nippon Petrochemicals Company, Limited. Electrical insulating oil and electrical appliances impregnated with the same. 4,621,302, Cl. 361-315.000.

Sato, Hiroshi: *See—*
Oogaki, Kenji; and Sato, Hiroshi, 4,621,304, Cl. 361-386.000.
Suzuki, Akiyoshi; Sato, Hiroshi; and Ishiyama, Ichiro, 4,620,785, Cl. 355-53.000.

Sato, Katsuyuki: *See—*
Hijikata, Kenichi; Sato, Katsuyuki; Maruyama, Hitoshi; and Furuhashi, Ryoko, 4,620,872, Cl. 75-246.000.

Sato, Maki: *See—*
Narabu, Tadakuni; Hashimoto, Takeo; Kanbe, Hideo; Sato, Maki; and Nakashio, Miaki, 4,621,369, Cl. 377-60.000.

Sato, Shinji: *See—*
Igata, Naohiro; and Sato, Shinji, 4,620,885, Cl. 148-435.000.

Sato, Tadahisa; Kawagishi, Toshio; and Furutachi, Nobuo, to Fuji Photo Film Co., Ltd. Pyrazolo(1,5-B)-1,2,4-triazole derivatives. 4,621,046, Cl. 430-381.000.

Sato, Toshihiro; Suzuki, Ryo; Ikeda, Tadashi; Takeuchi, Teruaki; and Sugita, Yutaka, to Hitachi, Ltd. Magnetic bubble device. 4,621,344, Cl. 365-36.000.

Sato, Yasuo: *See—*
Okada, Yoshiyuki; and Sato, Yasuo, 4,621,144, Cl. 548-358.000.

Sato, Yoshio: *See—*
Nishikawa, Mitsuyo; Kurihara, Nobuo; Sato, Yoshio; Watanabe, Atsumi; Higashi, Toshihiko; Miyagaki, Hisanori; Yokogawa, Atsushi; and Shimada, Yoshihiro, 4,620,491, Cl. 110-185.000.

Sato, Yuji: *See—*
Kanda, Motoya; Sato, Yuji; Shincho, Eriko; and Mitsuyasu, Kiyoshi, 4,621,034, Cl. 429-59.000.

Sattler, Hans P.: *See—*
Wincierz, Peter; and Sattler, Hans P., 4,620,886, Cl. 148-439.000.

Saunders, Charles A. Adjustable anchor tab. 4,620,524, Cl. 124-35.00A.

Saunders, Jimmy G.: *See—*
Charlton, Richard J.; Krueger, Leland R.; Noling, Richard M.; Saunders, Jimmy G.; and Elliott, Richard J., 4,620,359, Cl. 29-557.000.

Savin Corporation: *See—*
Landa, Benzion; Sagiv, Oded; and Levy, Nathan A., 4,620,699, Cl. 271-245.000.

Sawada, Kenji: *See—*
Kondo, Shiro; and Sawada, Kenji, 4,621,174, Cl. 200-5.00R.

Saxe, Charles L.; and Jones, Roydn, to Tektronix, Inc. Anti-aliasing filter circuit for oscilloscopes. 4,621,217, Cl. 315-1.000.

Scahill, John W.: *See—*
Diebold, James P.; and Scahill, John W., 4,620,795, Cl. 366-241.000.

Scapin, Mauro: *See—*
Bargigia, Gianangelo; and Scapin, Mauro, 4,620,946, Cl. 252-545.000.

Scarinzi, Renato, to Montres RADO SA. Watch case. 4,620,798, Cl. 368-276.000.

Schachar, Ronald A. Ophthalmological irrigating solution containing ascorbate. 4,620,979, Cl. 424-153.000.

Schachter, Rozalie: *See—*
Michel, Christian G.; Schachter, Rozalie; Kuck, Mark A.; Baumann, John A.; and Raccah, Paul M., 4,620,968, Cl. 423-299.000.

Schafer, Wolfgang: *See—*
Maisch, Wolfgang; and Schafer, Wolfgang, 4,620,520, Cl. 123-571.000.

Schaltbau GmbH: *See—*
Happach, Anton, 4,621,247, Cl. 335-202.000.

Schenk, Manfred: *See—*
Gloss, Erwin; Lotterbach, Gerhard; Perenthaler, Egbert; Schenk, Manfred; van Woudenberg, Jan F.; and Zucker, Udo, 4,620,420, Cl. 60-602.000.

Schepers, Charles; and Schroder, Wolfgang, to International Standard Electric Corporation. Consumer electronics equipment combination consisting of a television receiver and of a video recording and/or reproducing apparatus. 4,621,259, Cl. 340-707.000.

Schering A.G.: *See—*
Doroshuk, Charles M., 4,620,550, Cl. 128-785.000.

Hubert, Hans-Juergen; and Tillmetz, Klaus D., 4,621,158, Cl. 564-473.000.
Lachnit-Fixson, Ursula; and Unger, Renate, 4,621,079, Cl. 514-170.000.
Schieser, Warren J.; Vickers, Stanley E.; and Duffey, Craig L., to Liqui-Box Corporation. Filler for bags connected in a continuous strip. 4,620,411, Cl. 53-570.000.
Schilling, John; and Dolinski, Joseph, to Jerrold Division, General Instrument Corporation. Protected television signal distribution system. 4,621,285, Cl. 358-120.000.
Schimmel, Gunther; Ressel, Herbert; Heymer, Gero; and Gradl, Reinhard, to Hoechst Aktiengesellschaft. Process for defluorinating alkali metal phosphate solutions. 4,620,966, Cl. 423-185.000.
Schloman, William W., Jr.; and Davis, James A., to Firestone Tire & Rubber Company, The. Sulfurized guayule resin and rubber. 4,621,118, Cl. 525-130.000.
Schmid, Dieter: *See*—
Tetzlaff, Karl-Heinz; Schmid, Dieter; and Russow, Jurgen, 4,620,902, Cl. 204-1.00R.
Schmid, Gunther: *See*—
Reum, Helmut; Frey, Thomas; Grunwald, Werner; Imhof, Ernst; Komaroff, Iwan; Schmid, Gunther; and Schmid, Kurt, 4,620,516, Cl. 123-275.000.
Schmid, Kurt: *See*—
Reum, Helmut; Frey, Thomas; Grunwald, Werner; Imhof, Ernst; Komaroff, Iwan; Schmid, Gunther; and Schmid, Kurt, 4,620,516, Cl. 123-275.000.
Schmid, Roy. Method for drywall patching. 4,620,407, Cl. 52-741.000.
Schmidek, Reinhard, to Mero-Raumstruktur GmbH & Co. Apparatus for screwing in set screws, which can be operated by a wrench. 4,620,458, Cl. 81-57.280.
Schmidt, Eckart W., to Rocket Research Company. Method for initiating decomposition of hydrazine fuels. 4,620,415, Cl. 60-219.000.
Schmidt, Horst: *See*—
Petersen, Harro; Immel, Gunther; Weiss, Wolfram; Schmidt, Horst; and Busse, Gerd, 4,621,133, Cl. 528-252.000.
Schmidt, Karlwalter: *See*—
Oblander, Kurt; Abthoff, Jorg; Schuster, Hans-Dieter; and Schmidt, Karlwalter, 4,620,448, Cl. 73-861.710.
Schmidt, Manfred, to Milupa Aktiengesellschaft. Cap for opening and extracting the contents of a vessel. 4,620,638, Cl. 215-11.00R.
Schmidt, Manfred: *See*—
Dietrich, Manfred; Schmidt, Manfred; Wiedermann, Rolf; and Konig, Klaus, 4,621,104, Cl. 521-107.000.
Schneppendahl, Richard: *See*—
Grawe, Franz-Eugen; Grimm, Manfred; Schneppendahl, Richard; and Hasemann, Fred, 4,621,309, Cl. 362-342.000.
Scholz, Hansjurgen; Brambilla, Luigi; and Jahn, Walter, to Daimler-Benz Aktiengesellschaft. Automatic passenger safety system. 4,620,721, Cl. 280-735.000.
Schorr, Peter: *See*—
Kliesch, Wilfried; Koch, Friedrich O.; Wahl, Hans J.; Krebs, Rolf; Schorr, Peter; and Strauch, Heinz, 4,621,176, Cl. 219-8.500.
Schroder, Wolfgang: *See*—
Schepers, Charles; and Schroder, Wolfgang, 4,621,259, Cl. 340-707.000.
Schroeder, Albert H.: *See*—
Denisevich, Peter, Jr.; Schroeder, Albert H.; Kurkov, Victor P.; and Suzuki, Shigeto, 4,620,943, Cl. 252-518.000.
Schroeder, Terry A.: *See*—
Haque, Sazzadul; and Schroeder, Terry A., 4,620,822, Cl. 408-224.000.
Schulz, Donald N.: *See*—
Duvdevani, Ilan; Schulz, Donald N.; Kitano, Kissho; and Peiffer, Dennis G., 4,621,111, Cl. 524-107.000.
Schuster, Hans-Dieter: *See*—
Oblander, Kurt; Abthoff, Jorg; Schuster, Hans-Dieter; and Schmidt, Karlwalter, 4,620,448, Cl. 73-861.710.
Schutt, Hans U., to Shell Offshore Inc. Recovering oil by injecting ammoniated and nitrited seawater. 4,620,595, Cl. 166-275.000.
Schwartz, Vladimir; and Freytsis, Avrum, to Varian Associates, Inc. Vacuum pick for semiconductor wafers. 4,620,738, Cl. 294-64.100.
Schwartzman, Gilbert, to Dab-O-Matic Corp. Pressure-responsive valve. 4,620,648, Cl. 222-490.000.
Schwarz, Eitan D. Cigarette dispenser. 4,620,555, Cl. 131-270.000.
Schwarze, Werner; Wolff, Siegfried; Remmel, Hans; and Lambertz, Horst, to Degussa Aktiengesellschaft. Vulcanizable mixture containing bis-(2-ethylamino-s-triazin-6-yl)-tetrasulfide. 4,621,121, Cl. 525-329.300.
Schwing, Ewald; Sommer, Peter; and Uhrner, Horst. Fluidized-bed heat-treatment method for metallic workpieces. 4,620,883, Cl. 148-13.000.
Scipione, Fred J. Communications interface for duplex transmission and reception of data and other signals over telephone lines. 4,621,356, Cl. 379-98.000.
SCM Corporation: *See*—
Lin, Ju-Chui; Carlson, Gary M.; and Abbey, Kirk J., 4,621,131, Cl. 528-192.000.
Scoazec, Henri: *See*—
Pinto, Odile; and Scoazec, Henri, 4,620,964, Cl. 423-27.000.
Scotese, Anthony C.; Santilli, Arthur A.; and Strike, Donald P., to American Home Products Corporation. Precursors of benzo- and thieno-fused heterocyclic anti-ulcer agents. 4,621,142, Cl. 546-198.000.
Scruggs, David M., to Dresser Industries, Inc. Composite material bonded by an amorphous metal, and preparation thereof. 4,621,031, Cl. 428-627.000.
SEB S.A.: *See*—
Sebillotte, Christian, 4,620,643, Cl. 220-316.000.
Sebillotte, Christian, to SEB S.A. Safety device for opening and closing a pressure-cooking appliance without danger. 4,620,643, Cl. 220-316.000.
Secifarma S.p.A.: *See*—
Bernini, Giuseppe, 4,621,152, Cl. 562-401.000.
Seib, Martin R. P., to Imtec Management Information Technology Limited. Planetary camera. 4,620,784, Cl. 355-27.000.
Seiki, Kazuo: *See*—
Anahara, Meiji; and Seiki, Kazuo, 4,620,413, Cl. 57-261.000.
Seki, Hideo, to Hitachi, Ltd. Liquid sample injecting apparatus. 4,620,452, Cl. 73-864.210.
Seki, Toshio: *See*—
Kimura, Fumio; Haga, Takahiro; Maeda, Kazuyuki; Hayashi, Kouji; Seki, Toshio; and Yoshida, Tsunezo, 4,620,868, Cl. 71-90.000.
Sekiya, Toshifumi: *See*—
Takami, Akio; Matsuura, Toshitaka; Sekiya, Toshifumi; and Kuroki, Yoshiaki, 4,620,437, Cl. 73-23.000.
Selbherr, Anton: *See*—
Linck, Erich; Holik, Herbert; Siewert, Woflgang; and Selbherr, Anton, 4,620,926, Cl. 210-221.200.
Sell, Gerhard, to VDO Adolf Schindling AG. Display device. 4,621,306, Cl. 362-29.000.
Senft, Stephen P.: *See*—
Morris, Merle; Meade, Steven L.; and Senft, Stephen P., 4,621,220, Cl. 313-318.000.
Serafini, Giulio: *See*—
Ripani, Sergio; and Serafini, Giulio, 4,620,477, Cl. 99-486.000.
Serpelloni, Michel, to Roquette Freres. Pastilles of the lozenge type based on crystalline sorbitol or fructose and process for their manufacture. 4,620,982, Cl. 426-658.000.
Sessions, Samuel D.: *See*—
Verrill, Dale R.; and Sessions, Samuel D., 4,620,578, Cl. 144-2.00Z.
Sevitsky, Gary S.; Short, Kevin L.; and Paulson, Robert T., to Dictaphone Corporation. Recording and dictation system. 4,621,350, Cl. 369-29.000.
Shaffer, James E.: *See*—
Distin, Robert; and Shaffer, James E., 4,620,456, Cl. 74-800.000.
Distin, Robert; and Shaffer, James E., 4,620,457, Cl. 74-800.000.
Shallenberger, John M.: *See*—
Wilson, John F.; Gjertsen, Robert K.; and Shallenberger, John M., 4,620,960, Cl. 376-446.000.
Shanks, Teddy L., to Best, Franklin L.; and Best, Betty L. Adaptor plate for vehicle bumper. 4,620,736, Cl. 293-116.000.
Sharp Kabushiki Kaisha: *See*—
Horiguchi, Michiyuki; Matsui, Yoshimitsu; and Ohashi, Masakazu, 4,621,367, Cl. 375-36.000.
Suzuki, Akihisa, 4,620,606, Cl. 181-170.000.
Taguchi, Toshimichi; and Akao, Hideyuki, 4,621,178, Cl. 219-10.55B.
Shedigian, Vandos, to Emhart Industries, Inc. Dielectric fluid for a capacitor. 4,621,301, Cl. 361-314.000.
Sheffield, Paul J.: *See*—
Koegel, Ewald; and Sheffield, Paul J., 4,620,538, Cl. 128-201.230.
Shell Offshore Inc.: *See*—
Schutt, Hans U., 4,620,595, Cl. 166-275.000.
Shell Oil Company: *See*—
Blytas, George C.; Foster, E. Gordon; and Grimsby, F. Norman, 4,620,911, Cl. 204-182.400.
Collipp, Bruce G., 4,620,820, Cl. 405-224.000.
Grimsby, F. Norman, 4,620,910, Cl. 204-182.400.
Grimsby, F. Norman; and Blytas, George C., 4,620,912, Cl. 204-182.400.
Langner, Carl G., 4,620,818, Cl. 405-169.000.
Orr, Alexander F., 4,620,866, Cl. 71-88.000.
Van Der Eijk, Huno; Heinerman, Jacobus J. L.; and Maxwell, Ian E., 4,620,920, Cl. 208-86.000.
Shene, William R.; Nowacki, Christopher; and Brisson, Alfred G., to Trutek Research, Inc. Non-invasive destruction of kidney stones. 4,620,545, Cl. 128-328.000.
Shenton, David W.: *See*—
Heppenstall, R. Bruce; and Shenton, David W., 4,620,543, Cl. 128-419.00F.
Shepheard, Thomas E., to Air-A-Plane Corporation. Combined passenger loading bridge and utilities conduit between airport terminal and parked aircraft. 4,620,339, Cl. 14-71.500.
Shifferaw, Tessema. Universal exercising machine. 4,620,704, Cl. 272-135.000.
Shigeta, Masao; Sugenoya, Shotatsu; and Cho, Tsutomu, to TDK Corporation. Amorphous cut core. 4,621,248, Cl. 336-178.000.
Shihabi, David S., to Mobil Oil Corporation. Oxygenate conversion over activated zeolite catalyst. 4,621,161, Cl. 585-408.000.
Shiiki, Kazuo: *See*—
Uesaka, Yasutaro; Fujiwara, Hideo; Hishiyama, Sadao; and Shiiki, Kazuo, 4,621,030, Cl. 428-607.000.
Shimada, Masaru; and Sasaki, Masaomi, to Ricoh Company, Ltd. Aqueous ink composition. 4,620,875, Cl. 106-22.000.
Shimada, Masato: *See*—
Nishikawa, Toshio; Imai, Shiro; Yagi, Kenkichi; Yoshida, Yuriko; Shimada, Masato; Nagashima, Junnosuke; and Nakamura, Teruo, 4,620,852, Cl. 8-515.000.

Shimada, Yoshihiro: *See—*
Nishikawa, Mitsuyo; Kurihara, Nobuo; Sato, Yoshio; Watanabe, Atsumi; Higashi, Toshihiko; Miyagaki, Hisanori; Yokogawa, Atsushi; and Shimada, Yoshihiro, 4,620,491, Cl. 110-185.000.

Shimaji, Kenji: *See—*
Hirata, Akira; Nagayama, Hajime; Watanabe, Akinori; Nitta, Kouji; and Shimaji, Kenji, 4,620,931, Cl. 210-617.000.

Shimamoto, Kozo: *See—*
Uchikawa, Fusaoki; Takeuchi, Morihisa; Shimamoto, Kozo; Miyao, Kunihiko; Momiyama, Kimio; and Watarai, Hisao, 4,621,249, Cl. 338-35.000.

Shimatani, Shunichi: *See—*
Kimura, Shoji; Shimatani, Shunichi; and Yoshimura, Atsuo, 4,620,900, Cl. 202-172.000.

Shincho, Eriko: *See—*
Kanda, Motoya; Sato, Yuji; Shincho, Eriko; and Mitsuyasu, Kiyoshi, 4,621,034, Cl. 429-59.000.

Shinka, Noriyasu: *See—*
Nagao, Kosuke; Ishii, Shuzo; Shinka, Noriyasu; Maeno, Yoshihiro; and Morita, Naoki, 4,620,677, Cl. 242-107.600.

Shinohara, Nobutaka; Minami, Akihiro; and Hirakawa, Shuji, to Kabushiki Kaisha Toshiba. Digital chromakey apparatus. 4,621,280, Cl. 358-22.000.

Shiono, Shigeo: *See—*
Odashima, Hitoshi; Sasaki, Hideaki; Kazui, Shinichi; Shiono, Shigeo; Isshiki, Osamu; and Kawana, Takeshi, 4,620,663, Cl. 228-44.700.

Shirley, Gaylord R.: *See—*
Chiodo, Daniel J.; Shirley, Gaylord R.; and Oquendo, Joseph, 4,620,410, Cl. 53-561.000.

Shishov, Nikolai M.; Zelenetsky, Vladimir E.; Demina, Nadezhda A.; Bondarev, Ivan M.; Cherny, Alexandr N.; Moskvitin, Valery A.; and Rylov, Evgeny E., deceased (by Rybakova, Nina Alexeevna, administratrix), to Vsesojuzny Nauchno-Issledovatelsky Institut Meditsinskikh Polimerov. Device for administering powdered substances. 4,620,847, Cl. 604-58.000.

Shoji, Yoshifusa: *See—*
Baba, Yoshio; Uno, Teruo; Yoshida, Hideo; and Shoji, Yoshifusa, 4,620,961, Cl. 420-542.000.

Short, Kevin L.: *See—*
Sevitsky, Gary S.; Short, Kevin L.; and Paulson, Robert T., 4,621,350, Cl. 369-29.000.

Showa Denko Kabushiki Kaisha: *See—*
Maeda, Masahiko; and Watanabe, Naotochi, 4,620,939, Cl. 252-301.170.

Sidewinder Products Corporation: *See—*
Singleton, Robert P., 4,620,459, Cl. 81-57.290.

Siemens Aktiengesellschaft: *See—*
Fenk, Josef, 4,621,238, Cl. 330-254.000.
Spirk, Franz, 4,621,211, Cl. 310-232.000.
Tschoepe, Norbert, 4,621,364, Cl. 371-38.000.
Volkmar, Ralf R., 4,621,175, Cl. 200-335.000.
Winter, Rudolf; Horner, Albert; and Lindner, Adalbert, 4,620,889, Cl. 156-166.000.

Siemon Company, The: *See—*
Knickerbocker, Robert H., 4,620,765, Cl. 339-154.00A.

Siewert, Woflgang: *See—*
Linck, Erich; Holik, Herbert; Siewert, Woflgang; and Selbherr, Anton, 4,620,926, Cl. 210-221.200.

Sigma Corporation: *See—*
Kanda, Kaoru; and Kanda, Kunihiko, 4,621,037, Cl. 430-30.000.

Siler, Steven J.: *See—*
Pulkowski, Jeffrey H.; and Siler, Steven J., 4,621,177, Cl. 219-10.49A.

Silla, Martini; and Chiaro, Mario. Device for preparing foamy milk. 4,620,953, Cl. 261-142.000.

Simnovec, Andrej, to Friedrich Wilh. Schwing GmbH. Remote control system for constructional machinery. 4,621,375, Cl. 455-603.000.

Simon, Peter: *See—*
Grega nee Toth, Erzsebet; Koppany, Eniko ; Bodi, Tibor; Nagy, Jozsef; Dombay, Zsolt; Szarvas, Tibor; Horvath, Laszlo ; Szabo nee Muranyi, Ildiko ; Marton, Jozsef; Pozsar, Bela, Jr.; Viranyi, Sandor; Simon, Peter; Keseru, Jozsef; and Eifert, Jozsef, 4,620,871, Cl. 71-92.000.

Simpson, Clarence E., to Unidynamics Phoenix, Inc. Missile safe and arm system. 4,620,483, Cl. 102-222.000.

Simpson, Harold G.; and Neyer, Leo E., to Harold Simpson, Inc. Roof system positionable over an existing roof structure and method for installing same. 4,620,397, Cl. 52-66.000.

Simson, Dionizy, to ENFO Grundlagenforschungs AG. Hydraulic cylinder with power-multiplication. 4,620,419, Cl. 60-560.000.

Sindou, Osamu: *See—*
Toki, Kuni; and Sindou, Osamu, 4,621,228, Cl. 324-61.00R.

Singer, Helmut; Bellantoni, Ellen; and LeBoeuf, Albert R., to American Optical Corporation. Hydrogel from ultraviolet-initiated copolymerization. 4,620,954, Cl. 264-1.400.

Singleton, Robert P., to Sidewinder Products Corporation. Speed socket wrench. 4,620,459, Cl. 81-57.290.

Skaar, Thomas F., to J. M. Voith GmbH. Method and apparatus for treating waste paper suspensions. 4,620,671, Cl. 241-19.000.

Skrypzak, Werner: *See—*
Quack, Jochen M.; Reng, Alwin; Skrypzak, Werner; and Kunz, Walter, 4,620,976, Cl. 424-70.000.

Skukowski, William T., to Tropicana Products, Inc. UPC scannable marking composition and applications thereof. 4,620,877, Cl. 106-23.000.

SKW Trostberg Aktiengesellschaft: *See—*
von Seyerl, Joachim, 4,621,128, Cl. 528-93.000.

Slatterly, James A., to Indium Corporation of America. Corrosion resistant lid for semiconductor package. 4,620,661, Cl. 228-209.000.

Slemmons, Arthur J. Cam cleat. 4,620,499, Cl. 114-218.000.

Sloan Valve Company: *See—*
Lissau, Frederic, 4,620,328, Cl. 4-192.000.

Smith, Brian M.; and Torti, Emanuel D., to Texas Instruments Incorporated. High density chip socket. 4,620,761, Cl. 339-75.0MP.

Smith, James D. B., to Westinghouse Electric Corp. β-keto amide modified epoxy resins. 4,621,025, Cl. 428-414.000.

Snarr, La Vere. Occupant propelled roundabout. 4,620,700, Cl. 272-33.00R.

So-Luminaire Systems Corp.: *See—*
Dominguez, Richard L., 4,620,771, Cl. 350-258.000.

Societa Cavi Pirelli S.p.A.: *See—*
Portinari, Antonio, 4,620,412, Cl. 57-6.000.

Societe Chimique des Charbonnages-CdF Chimie: *See—*
Neyer, Jean-Marie; Machon, Jean-Pierre; and Bujadoux, Karel, 4,621,124, Cl. 526-125.000.

Societe d'Electronique de la Region Pays de Loire Serel: *See—*
Colineau, Joseph, 4,621,281, Cl. 358-60.000.

Societe d'Exploitation de Brevets pour l'Industrie et la Marine: *See—*
Gery, Alain; Chantot, Hubert; and Gemignani, Francois, 4,620,566, Cl. 137-613.000.

Societe Nationale de l'Amiante: *See—*
L'Esperance, Chantal; and Belanger, Germain, 4,620,401, Cl. 52-309.150.

Societe Nationale Elf Aquitaine: *See—*
Armand, Michel; Muller, Daniel; and Chabagno, Jean-Michel, 4,620,944, Cl. 252-518.000.

Societe Nationale Industrielle et Aerospatiale: *See—*
Jumel, Jean P.; and Guala, Bernard, 4,620,466, Cl. 83-177.000.

Soderquist, Curt R.: *See—*
Lycke, Anders H.; and Soderquist, Curt R., 4,620,754, Cl. 312-330.00R.

Sokolowski, Robert C.: *See—*
Fleischer, Glen R.; Glashagel, Barry B.; Harke, Elwood W.; Sokolowski, Robert C.; and Fay, James E., 4,621,011, Cl. 428-221.000.

Soled, Stuart L.: *See—*
Fiato, Rocco A.; and Soled, Stuart L., 4,621,102, Cl. 518-700.000.

Solis S.r.l.: *See—*
Gazzarrini, Vinicio, 4,620,650, Cl. 223-43.000.

Sollers, Joseph S.: *See—*
Fracalossi, Roland N.; Greenhouse, Walter V. V.; and Sollers, Joseph S., 4,621,106, Cl. 521-130.000.

Sommer, Peter: *See—*
Schwing, Ewald; Sommer, Peter; and Uhrner, Horst, 4,620,883, Cl. 148-13.000.

Sony Corporation: *See—*
Narabu, Tadakuni; Hashimoto, Takeo; Kanbe, Hideo; Sato, Maki; and Nakashio, Miaki, 4,621,369, Cl. 377-60.000.
Tanaka, Sakae, 4,621,215, Cl. 313-422.000.
Yamada, Hisafumi; Kuriki, Choei; and Saito, Junya, 4,621,288, Cl. 358-153.000.

Sottak, Paul E.: *See—*
Reed, Albert D.; and Sottak, Paul E., 4,620,698, Cl. 269-328.000.

Soulet, Christian: *See—*
Horn, Laurent; Hautdidier, Jerome; and Soulet, Christian, 4,620,463, Cl. 82-1.00C.

Southard, Benny S. Tree step. 4,620,610, Cl. 182-92.000.

Sowash, Thomas R.: *See—*
Johnston, Daniel U.; Sowash, Thomas R.; and Watson, Richard D., 4,620,620, Cl. 188-319.000.

Spencer, Donald J.: *See—*
Kristof, Mark J.; and Spencer, Donald J., 4,621,180, Cl. 219-10.55R.

Sperry Corporation: *See—*
Holste, Daniel D.; and Reiners, Lawrence L., 4,621,320, Cl. 364-200.000.
Sweeny, Mark F., 4,621,203, Cl. 307-306.000.

Spies, Mary A. Clothes hanger with concealable storage compartment. 4,620,651, Cl. 223-88.000.

Spire Corporation: *See—*
Landis, Geoffrey A., 4,620,364, Cl. 29-572.000.

Spirk, Franz, to Siemens Aktiengesellschaft. Electrical machine brushes and sliprings with brush dust collecting apparatus. 4,621,211, Cl. 310-232.000.

Srivastava, Gopal K.: *See—*
Bart, Stan; and Srivastava, Gopal K., 4,621,289, Cl. 358-153.000.

Stafset, Kare, to Kva-Spil Ltd. Turnable window arrangement having a stop device for a partially open position. 4,620,393, Cl. 49-394.000.

Stahl, Eugen H.: *See—*
von Glanstatten, Thassilo A. F.; and Stahl, Eugen H., 4,620,569, Cl. 138-132.000.

Staibano, Giorgio: *See—*
Rosini, Sergio; and Staibano, Giorgio, 4,621,077, Cl. 514-108.000.

Stainer, David J.: *See—*
Melland, Tristan G., 4,620,405, Cl. 52-645.000.

Staley, Ellis J., III; and Walsh, John G., III. Apparatus for receiving empty beverage cans. 4,620,681, Cl. 248-95.000.

Standard Oil Company (Indiana): *See—*
Tait, A. Martin; Nevitt, Thomas D.; and Hensley, Albert L., Jr., 4,620,922, Cl. 208-254.00H.

Standard Telephones and Cables Public Limited Company: *See—*
Bryant, Michael J.; and Jones, Stephen J., 4,621,168, Cl. 174-88.00C.

Oldham, Ronald C., 4,621,167, Cl. 174-70.00S.
Stark, Gerhard; and Hoffmann, Klaus, to Stark, Gerhard. Machining center with magazine for spare tools. 4,620,347, Cl. 29-26.00A.
State University of New York: *See—*
Beachley, Orville T., Jr., 4,621,147, Cl. 556-1.000.
Statton, Garry L.; and Gaul, James M., to Atlantic Richfield Company. Preparation of fire retardant flexible polyurethane foams having reduced discoloration and scorch. 4,621,105, Cl. 521-107.000.
Stauffer Chemical Company: *See—*
Michel, Christian G.; Schachter, Rozalie; Kuck, Mark A.; Baumann, John A.; and Raccah, Paul M., 4,620,968, Cl. 423-299.000.
Steiner, Gerd, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Inking unit for a printing machine. 4,620,481, Cl. 101-350.000.
Steinheuser, Peter: *See—*
Menezes, Edgar; and Steinheuser, Peter, 4,620,542, Cl. 128-335.500.
Stepanenko, Alexandr V.; Voitov, Vladimir G.; Karpitsky, Viktor S.; and Bartashevich, Svyatoslav A., to Belorussky Politekhnichesky Institut. Device for manufacturing microwire. 4,620,432, Cl. 72-73.000.
Stevens-Arnold, Inc.: *See—*
O'Brien, Richard A., 4,621,311, Cl. 363-21.000.
Stewart, William S.; and Blaesi, John E., to Phillips Petroleum Company. Control of an isomerization process. 4,621,062, Cl. 436-55.000.
Stiegler, Ludwig, to Johann Stiegler KG, GMBH & Co. Method and device for impregnating especially natural stones. 4,620,989, Cl. 427-289.000.
Stockburger, Hermann; and Winderlich, Hans-Georg. Credit card. 4,620,727, Cl. 283-82.000.
Stockburger, Hermann; and Winderlich, Hans-Georg. Data card and data strip measuring means. 4,621,188, Cl. 235-382.000.
Storage Technology Partners II: *See—*
Baer, James W.; Hoshiko, Henry H.; McIntosh, Robert P.; Reilly, Charles M.; Romano, Paul M.; and Hargarten, James W., 4,621,351, Cl. 369-44.000.
Strack, Hans; Kleinschmit, Peter; and Parr, Ehrfried, to DeGussa AG. Zeolite granulate, process for its production and use. 4,620,399, Cl. 52-172.000.
Strahilevitz, Meir. Treatment methods, particularly for psychoactive drug dependence. 4,620,977, Cl. 424-88.000.
Strand, David A.: *See—*
deNeufville, John P.; and Strand, David A., 4,621,032, Cl. 428-688.000.
Strauch, Heinz: *See—*
Kliesch, Wilfried; Koch, Friedrich O.; Wahl, Hans J.; Krebs, Rolf; Schorr, Peter; and Strauch, Heinz, 4,621,176, Cl. 219-8.500.
Strike, Donald P.: *See—*
Scotese, Anthony C.; Santilli, Arthur A.; and Strike, Donald P., 4,621,142, Cl. 546-198.000.
Stritzl, Karl, to TMC Corporation. Apparatus for adjusting the longitudinal position of a binding part on a ski. 4,620,719, Cl. 280-633.000.
Strix Limited: *See—*
Taylor, John C.; and Binns, Phillip G., 4,621,186, Cl. 219-330.000.
Stromberg-Carlson Corporation: *See—*
Jotwani, Haresh, 4,621,358, Cl. 370-56.000.
Stubbs, Harold L. Rotatable animal tethering device. 4,620,506, Cl. 119-117.000.
Suddeutsche Metallindustrie GmbH & Co. KG: *See—*
Wincierz, Peter; and Sattler, Hans P., 4,620,886, Cl. 148-439.000.
Sueki, Hiroshi; and Yufu, Kuniaki, to Rengo Co., Ltd. Single facer having two sets of corrugating rolls and a single pressure roll. 4,620,896, Cl. 156-471.000.
Suga, Nagaichi. Method of simply setting expansion regions for conversion of values of colors according to xyz notation system into values of colors according to Munsell notation system. 4,620,792, Cl. 356-402.000.
Suganuma, Kazuo; and Hamai, Tsuneo, to Kabushiki Kaisha Toshiba; and Toshiba Micro-Computer Engineering Corp. Logic circuit with MOSFETs arranged to reduce current flow. 4,621,207, Cl. 307-451.000.
Sugenoya, Shotatsu: *See—*
Shigeta, Masao; Sugenoya, Shotatsu; and Cho, Tsutomu, 4,621,248, Cl. 336-178.000.
Sugihara, Hiroshi: *See—*
Takasugi, Yasufumi; Kohmoto, Osamu; Sugihara, Hiroshi; and Nishimatsu, Masaharu, 4,621,008, Cl. 428-216.000.
Sugimoto, Hikoharu: *See—*
Goto, Daisaku; Sugimoto, Hikoharu; and Kato, Nobuyuki, 4,620,959, Cl. 264-335.000.
Sugimoto, Hiroshi: *See—*
Takenaka, Toshio; Sugimoto, Hiroshi; and Yamanaka, Yoshinobu, 4,621,263, Cl. 340-870.070.
Sugimoto, Kaname, to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo. Process for the production of human colony-stimulating factor. 4,621,050, Cl. 435-68.000.
Sugimoto, Kaname, to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo. Process for the production of human multiplication-stimulating activity. 4,621,051, Cl. 435-68.000.
Sugimoto, Kaname, to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo. Process for the production of human epidermal growth factor. 4,621,052, Cl. 435-68.000.
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Sugimoto, Koichi: *See—*
Hirabayashi, Hisaaki; Sugimoto, Koichi; Arai, Shinichi; Masui, Tomoyuki; and Inaba, Hidetoshi, 4,620,436, Cl. 73-1.00B.
Sugimoto, Toshihiko; Oishi, Yozo; Yamamoto, Suguru; and Kawaguchi, Masaaki, to Nitto Electric Industrial Co., Ltd. Liquid crystal display plastic cell structure. 4,620,772, Cl. 350-337.000.
Sugita, Yutaka: *See—*
Sato, Toshihiro; Suzuki, Ryo; Ikeda, Tadashi; Takeuchi, Teruaki; and Sugita, Yutaka, 4,621,344, Cl. 365-36.000.
Sugiuchi, Toshiyasu; Aoyama, Susumu; and Yoshida, Toshio, to Riken Corporation. Joint structure of tubular member and annular part. 4,620,454, Cl. 74-567.000.
Sugiura, Yasuyuki: *See—*
Watabe, Mitsuru; Morinaga, Shigeki; Sugiura, Yasuyuki; and Takahashi, Tadashi, 4,621,224, Cl. 318-594.000.
Sulej, John. Shop press. 4,620,352, Cl. 29-251.000.
Sulzer-Escher Wyss Aktiengesellschaft: *See—*
Guttinger, Heinz, 4,620,348, Cl. 29-116.0AD.
Sulzer-Escher Wyss GmbH: *See—*
Linck, Erich; Holik, Herbert; Siewert, Woflgang; and Selbherr, Anton, 4,620,926, Cl. 210-221.200.
Sumerford, Harold A.; and Collins, Melvin R. Vehicle off road fuel use indicator. 4,620,568, Cl. 137-899.400.
Sumitomo Chemical Company, Limited: *See—*
Takagishi, Hisao; Kawakami, Kazunori; Kamio, Kunimasa; and Okuno, Khoichi, 4,621,123, Cl. 525-507.000.
Sumitomo Electric Industries, Ltd.: *See—*
Tsuno, Koichi, 4,620,769, Cl. 350-96.260.
Sumitomo Heavy Industries, Ltd.: *See—*
Koide, Masakazu; Okazaki, Takashi; and Asari, Takashi, 4,620,583, Cl. 164-154.000.
Sumitomo Light Metal Industries, Ltd.: *See—*
Baba, Yoshio; Uno, Teruo; Yoshida, Hideo; and Shoji, Yoshifusa, 4,620,961, Cl. 420-542.000.
Sumitomo Metal Industries, Ltd.: *See—*
Koide, Masakazu; Okazaki, Takashi; and Asari, Takashi, 4,620,583, Cl. 164-154.000.
Summerer, Ray E. Safety monitoring system for punch press operators. 4,621,300, Cl. 361-175.000.
Sundstrand Corporation: *See—*
Krinickas, Alexander, Jr., 4,621,210, Cl. 310-61.000.
Watts, Thomas A., 4,620,475, Cl. 91-499.000.
Sundstrand Data Control, Inc.: *See—*
MacGugan, Douglas C.; Leonardson, Ronald B.; and Sand, William W., 4,620,442, Cl. 73-517.00R.
Suntory Limited: *See—*
Taguchi, Haruyoshi, 4,620,685, Cl. 248-349.000.
Suss, Naomi R.; and Porter, Samuel, Jr., to PPG Industries, Inc. Color plus clear coating system utilizing organo-modified clay in combination with organic polymer microparticles. 4,620,993, Cl. 427-407.100.
Suss, Naomi R.; and Porter, Samuel, Jr., to PPG Industries, Inc. Color plus clear coating system utilizing organo-modified clay. 4,620,994, Cl. 427-407.100.
Sutherland, Ian A.; and Chambers, Geoffrey R., to National Research Development Corporation. Powered infusion apparatus. 4,620,848, Cl. 604-154.000.
Suzuki, Akihisa, to Sharp Kabushiki Kaisha. Loudspeaker of plane diaphragm type. 4,620,606, Cl. 181-170.000.
Suzuki, Akiyoshi; Sato, Hiroshi; and Ishiyama, Ichiro, to Canon Kabushiki Kaisha. Sheet-like member having alignment marks and an alignment apparatus for the same. 4,620,785, Cl. 355-53.000.
Suzuki, Fuminari: *See—*
Nakajima, Hiroshi; Nakane, Yoshihito; Goshima, Toshikazu; Narita, Osamu; Nishizawa, Akira; and Suzuki, Fuminari, 4,621,007, Cl. 428-206.000.
Suzuki, Hajime, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Method and apparatus for disposal of weft yarn in a jet loom. 4,620,570, Cl. 139-435.000.
Suzuki, Hiromasa: *See—*
Ashihara, Yoshihiro; Suzuki, Hiromasa; and Kasahara, Yasushi, 4,621,048, Cl. 435-5.000.
Suzuki, Koji; Kawasaki, Masahiro; and Aoki, Harumi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Self-scanning type photoelectric conversion element drive device responsive to different detected light intensities for focus detection. 4,621,191, Cl. 250-201.000.
Suzuki, Kouji; Ikeda, Mitsushi; and Aoki, Toshio, to Tokyo Shibaura Denki Kabushiki Kaisha. Thin-film transistor circuit. 4,621,260, Cl. 340-719.000.
Suzuki, Kozo: *See—*
Otomo, Nobuyuki; Chiba, Hiroaki; Uno, Tsuneo; Aono, Toshiki; and Suzuki, Kozo, 4,620,995, Cl. 427-420.000.
Suzuki, Naoyoshi; Hirose, Tsuneo; and Osaki, Humio, to Otsuka Pharmaceutical Factory, Inc. Biologically active substance, process for preparing the substance and immunoactive composition. 4,621,054, Cl. 435-69.000.
Suzuki, Ryo: *See—*
Sato, Toshihiro; Suzuki, Ryo; Ikeda, Tadashi; Takeuchi, Teruaki; and Sugita, Yutaka, 4,621,344, Cl. 365-36.000.
Suzuki, Shigeto: *See—*
Denisevich, Peter, Jr.; Schroeder, Albert H.; Kurkov, Victor P.; and Suzuki, Shigeto, 4,620,943, Cl. 252-518.000.
Suzuki, Shinji: *See—*
Miyake, Toshio; Hijiya, Hiromi; Suzuki, Shinji; and Matsumoto, Teruo, 4,621,137, Cl. 536-5.000.

Suzuki, Tadashi; Takeda, Hitoshi; and Kishi, Norimasa, to Nissan Motor Company, Limited. CPU self-test system including the capability of disconnecting a faulty CPU from the common bus of a plural CPU system. 4,621,322, Cl. 364-200.000.

Suzuki, Yoshinori: *See*—
Aida, Satoshi; Matsumoto, Kenzo; Itoh, Ayao; Suzuki, Yoshinori; and Takamizawa, Kinya, 4,620,546, Cl. 128-660.000.

Suzumori, Takeo; Kokubu, Jun; and Kubota, Minoru, to Mitsubishi Gas Chemical Company, Inc. Method for generation of oxygen gas. 4,620,970, Cl. 423-579.000.

Swars, Helmut: *See*—
Maus, Wolfgang; and Swars, Helmut, 4,620,356, Cl. 29-432.000.

Swartzbaugh, Peter T., to Owens-Illinois, Inc. Lined child-resistant closure for widemouth liquid container. 4,620,640, Cl. 215-217.000.

Sweeny, Mark F., to Sperry Corporation. Transformer built of coupled flux shuttles. 4,621,203, Cl. 307-306.000.

Swiss Aluminium Ltd.: *See*—
Hilge, Bernhard; Kramer, Carl; and Knoch, Martin, 4,620,840, Cl. 432-121.000.

Sy, Kian-Bon K., to International Business Machines Corp. Routing architecture for a multi-ring local area network. 4,621,362, Cl. 370-88.000.

Syftestad, Glenn T.: *See*—
Caplan, Arnold I.; and Syftestad, Glenn T., 4,620,327, Cl. 632-10.000.

Syntex Computer Systems, Inc.: *See*—
Lippincott, Louis A., 4,620,707, Cl. 273-148.00B.

Syntex (U.S.A.) Inc.: *See*—
Verheyden, Julien P. H.; Martin, John C.; and McGee, Daniel P. C., 4,621,140, Cl. 544-276.000.

Synthelabo: *See*—
Wick, Alexander; Frost, Jonathan; and Lardenois, Patrick, 4,621,087, Cl. 514-300.000.

Szabo nee Muranyi, Ildiko : *See*—
Grega nee Toth, Erzsebet; Koppany, Eniko ; Bodi, Tibor; Nagy, Jozsef; Dombay, Zsolt; Szarvas, Tibor; Horvath, Laszlo ; Szabo nee Muranyi, Ildiko ; Marton, Jozsef; Pozsar, Bela, Jr.; Viranyi, Sandor; Simon, Peter; Keseru, Jozsef; and Eifert, Jozsef, 4,620,871, Cl. 71-92.000.

Szanto, Elmer G.: *See*—
Abildgaard, William H.; and Szanto, Elmer G., 4,620,724, Cl. 281-15.00R.

Szarvas, Tibor: *See*—
Grega nee Toth, Erzsebet; Koppany, Eniko ; Bodi, Tibor; Nagy, Jozsef; Dombay, Zsolt; Szarvas, Tibor; Horvath, Laszlo ; Szabo nee Muranyi, Ildiko ; Marton, Jozsef; Pozsar, Bela, Jr.; Viranyi, Sandor; Simon, Peter; Keseru, Jozsef; and Eifert, Jozsef, 4,620,871, Cl. 71-92.000.

Tabuchi, Jyoichi: *See*—
Kono, Koichi; Mori, Shoichi; Miyasaka, Kenji; and Tabuchi, Jyoichi, 4,620,955, Cl. 264-41.000.

Taguchi, Haruyoshi, to Suntory Limited. Rotating mechanism attachable to bottom of container. 4,620,685, Cl. 248-349.000.

Taguchi, Masayuki, to Amada Company, Limited. Apparatus for controlling cutting machines. 4,620,465, Cl. 83-74.000.

Taguchi, Toshimichi; and Akao, Hideyuki, to Sharp Kabushiki Kaisha. Microwave oven having a keyboard of the membrane type. 4,621,178, Cl. 219-10.55B.

Tait, A. Martin; Nevitt, Thomas D.; and Hensley, Albert L., Jr., to Standard Oil Company (Indiana). Catalyst and process for the hydrotreating of nitrogen-containing feeds. 4,620,922, Cl. 208-254.00H.

Takada, Yusaku: *See*—
Tanaka, Kiyoharu; Yoshinaga, Kenji; Takeda, Kenji; Oguri, Shinichi; Takada, Yusaku; and Ohno, Akio, 4,620,783, Cl. 355-14.00D.

Takagi, Hiroshi: *See*—
Yoshida, Minoru; Yamada, Hiromichi; Uchida, Yoko; Kohno, Hideki; and Takagi, Hiroshi, 4,621,194, Cl. 250-367.000.

Takagishi, Hisao; Kawakami, Kazunori; Kamio, Kunimasa; and Okuno, Khoichi, to Sumitomo Chemical Company, Limited. Phosphinylmethyl polypenols and polyglycidyl ethers thereof. 4,621,123, Cl. 525-507.000.

Takahashi, Hirotake, to Honda Giken Kogyo Kabushiki Kaisha. Steering apparatus for vehicle. 4,620,715, Cl. 280-269.000.

Takahashi, Hisatsugu: *See*—
Hosokawa, Hidehiro; Iida, Yoshimichi; and Takahashi, Hisatsugu, 4,620,422, Cl. 62-70.000.

Takahashi, Ichirou: *See*—
Tsuchihasi, Akira; Takahashi, Ichirou; and Miyake, Norihisa, 4,620,830, Cl. 414-735.000.

Takahashi, Mikio: *See*—
Nojima, Kazuhiro; and Takahashi, Mikio, 4,620,992, Cl. 427-362.000.

Takahashi, Minoru; Kano, Koichi; and Otsuka, Kan, to Fujitsu Ten Limited; and Toyota Jidosha Kabushiki Kaisha. Method and apparatus for analog-to-digital conversion. 4,621,255, Cl. 340-347.0AD.

Takahashi, Tadashi: *See*—
Watabe, Mitsuru; Morinaga, Shigeki; Sugiura, Yasuyuki; and Takahashi, Tadashi, 4,621,224, Cl. 318-594.000.

Takahashi, Yoshiyuki: *See*—
Ueshima, Michio; Takahashi, Yoshiyuki; Kitada, Ritsuo; and Nagai, Isao, 4,621,155, Cl. 562-534.000.

Takami, Akio; Matsuura, Toshitaka; Sekiya, Toshifumi; and Kuroki, Yoshiaki, to NGK Spark Plug Co., Ltd. Gas sensor. 4,620,437, Cl. 73-23.000.

Takamizawa, Kinya: *See*—
Aida, Satoshi; Matsumoto, Kenzo; Itoh, Ayao; Suzuki, Yoshinori; and Takamizawa, Kinya, 4,620,546, Cl. 128-660.000.

Takashima, Hiroaki: *See*—
Uemura, Seiichi; Takashima, Hiroaki; Kato, Osamu; and Nakazima, Hazime, 4,620,919, Cl. 208-45.000.

Takasugi, Hisashi: *See*—
Takaya, Takao; and Takasugi, Hisashi, 4,621,084, Cl. 514-225.000.

Takasugi, Yasufumi; Kohmoto, Osamu; Sugihara, Hiroshi; and Nishimatsu, Masaharu, to TDK Corporation. Magnetic recording medium. 4,621,008, Cl. 428-216.000.

Takatori, Oushou; Kanda, Osami; and Kitamura, Kunihiro. Conveyor for use in carrying leg parts of half made pantyhose in an integrated pantyhose sewing machine. 4,620,494, Cl. 112-121.150.

Takaya, Takao; and Takasugi, Hisashi, to Fujisawa Pharmaceutical Co., Ltd. Imidazo-heterocyclic compounds and pharmaceutical composition comprising the same. 4,621,084, Cl. 514-225.000.

Takeda Chemical Industries, Ltd.: *See*—
Okada, Yoshiyuki; and Sato, Yasuo, 4,621,144, Cl. 548-358.000.

Takeda, Hitoshi: *See*—
Suzuki, Tadashi; Takeda, Hitoshi; and Kishi, Norimasa, 4,621,322, Cl. 364-200.000.

Takeda, Kenji: *See*—
Tanaka, Kiyoharu; Yoshinaga, Kenji; Takeda, Kenji; Oguri, Shinichi; Takada, Yusaku; and Ohno, Akio, 4,620,783, Cl. 355-14.00D.

Takematsu, Tetsuo: *See*—
Iwata, Kazuo; Takematsu, Tetsuo; Nonaka, Yuji; Nakanishi, Akira; Morinaka, Hideo; Tsuzuki, Kenji; Murakami, Mitsuyuki; and Uotani, Takeshi, 4,621,090, Cl. 514-332.000.

Takemoto, Iwao; Ohba, Shinya; Aoki, Masakazu; Ando, Haruhisa; Nakai, Masaaki; Ozaki, Toshifumi; and Imaide, Takuya, to Hitachi, Ltd. Solid-state imaging device. 4,621,291, Cl. 358-213.000.

Takenaka, Toshio; Sugimoto, Hiroshi; and Yamanaka, Yoshinobu, to Mitsubishi Denki Kabushiki Kaisha. Vibration telemetering system. 4,621,263, Cl. 340-870.070.

Takenoya, Hideaki: *See*—
Hanyu, Susumu; Takenoya, Hideaki; and Saiki, Kazuyuki, 4,620,810, Cl. 400-689.000.

Takeuchi, Morihisa: *See*—
Uchikawa, Fusaoki; Takeuchi, Morihisa; Shimamoto, Kozo; Miyao, Kunihiko; Momiyama, Kimio; and Watarai, Hisao, 4,621,249, Cl. 338-35.000.

Takeuchi, Takeshi; and Kaito, Hideo, to Nisshin Steel Co., Ltd. Process for continuously coloring stainless steel. 4,620,882, Cl. 148-6.200.

Takeuchi, Teruaki: *See*—
Sato, Toshihiro; Suzuki, Ryo; Ikeda, Tadashi; Takeuchi, Teruaki; and Sugita, Yutaka, 4,621,344, Cl. 365-36.000.

Takeuchi, Yukou; and Nagata, Masaru, to Daido Tokushuko Kabushiki Kaisha. Powder surface welding method. 4,621,183, Cl. 219-121.0PL.

Takiguchi, Kiyoaki, to Computer Services Corporation. Sorting device. 4,620,634, Cl. 209-44.300.

Talarico, Louis C., II. Forefoot valgus compensated footwear. 4,620,376, Cl. 36-103.000.

Talbot, Jean-Guy, to Bombardier Inc. Snowmobile frame structure. 4,620,604, Cl. 180-190.000.

Tanaka, Haruhiko: *See*—
Sano, Yasuro; Tanaka, Haruhiko; and Murakami, Eiji, 4,620,497, Cl. 112-453.000.

Tanaka, Kiyoharu; Yoshinaga, Kenji; Takeda, Kenji; Oguri, Shinichi; Takada, Yusaku; and Ohno, Akio, to Canon Kabushiki Kaisha. Color image forming apparatus. 4,620,783, Cl. 355-14.00D.

Tanaka, Sakae, to Sony Corporation. Convergence system for a multi-beam electron gun. 4,621,215, Cl. 313-422.000.

Tanaka, Tatsuo; Miyazaki, Koichi; Kuwahara, Eiji; Yamazaki, Masaya; and Morita, Keiichi, to Kabushiki Kaisha Toshiba. Method of controlling refrigeration cycle. 4,620,424, Cl. 62-222.000.

Tanaka, Toshinori, to Mitsubishi Denki Kabushiki Kaisha. Multi-function starter. 4,621,197, Cl. 290-38.00R.

Tandem Computers Incorporated: *See*—
Bailey, Carl J., 4,621,199, Cl. 307-147.000.

Tappe, Horst; Hofmann, Klaus; Hahnke, Manfred; and Bode, Albert, to Cassella Aktiengesellschaft. Dyestuff mixtures, process for their preparation and process for dyeing and printing hydrophobic fiber materials. 4,620,853, Cl. 8-639.000.

Tarcy, Gary P.; Gavasto, Thomas M.; and Ray, Siba P., to Aluminum Company of America. Electrolytic production of metals using a resistant anode. 4,620,905, Cl. 204-64.00R.

Tashiro, Mikio; and Tsukiyama, Kou, to Teljin Ltd. Polyester fibers. 4,621,020, Cl. 428-361.000.

Tasi, Laszlo : *See*—
Dombay, Zsolt; Grega nee Toth, Erzsebet; Nagy, Jozsef; Pavliscsak, Csaba; Tasi, Laszlo ; Toth, Andras; Toth, Oszkar; Vitanyi, Judit; Bihari, Ferenc; Bohus, Peter; Inczedy, Peter; Magyari, Istvan; Kertesz nee Szabo, Marianna; Wohl, Laszlo ; and Ferenczi, Attila, 4,621,080, Cl. 514-187.000.

Tatsuno, Kimio; Kataoka, Keiji; Homma, Yoshifumi; and Ono, Yoshifumi, to Hitachi, Ltd.; and Hitachi Koki Co., Ltd. Optical scanning system. 4,620,768, Cl. 350-6.800.

Taylor, John C.; and Binns, Phillip G., to Strix Limited. Thermally-sensitive control arrangement for containers provided with electric immersion heaters. 4,621,186, Cl. 219-330.000.

Taylor, Lloyd D.: *See*—
Barton, Derek H. R.; Bronstein-Bonte, Irena Y.; and Taylor, Lloyd D., 4,621,156, Cl. 564-250.000.

Taylor, Robert E.: *See—*
Dolph, Darrel A.; Demski, Leonard W.; Taylor, Robert E.; and Loisel, Jean-Marie, 4,621,327, Cl. 364-424.000.

Tazuma, James J., to Goodyear Tire & Rubber Company, The. Process for the preparation of N-tetrathiodimorpholine. 4,621,139, Cl. 544-85.000.

TDK Corporation: *See—*
Shigeta, Masao; Sugenoya, Shotatsu; and Cho, Tsutomu, 4,621,248, Cl. 336-178.000.
Takasugi, Yasufumi; Kohmoto, Osamu; Sugihara, Hiroshi; and Nishimatsu, Masaharu, 4,621,008, Cl. 428-216.000.
Yoda, Kuniichi; and Kawasaki, Kaoru, 4,621,018, Cl. 428-329.000.

Teetz, Volker: *See—*
Friedrich, Axel; Konig, Wolfgang; Teetz, Volker; Geiger, Rolf; and Sandow, Jurgen K., 4,621,073, Cl. 514-11.000.

Tektronix, Inc.: *See—*
Saxe, Charles L.; and Jones, Roydn, 4,621,217, Cl. 315-1.000.

Tekulve, Daniel R.: *See—*
Laskowski, Donald R.; and Tekulve, Daniel R., 4,620,373, Cl. 34-16.500.

Telecommunications Radioelectriques et Telephoniques T.R.T.: *See—*
Guidoux, Loic B. Y., 4,621,173, Cl. 370-32.100.

Teledyne Industries, Inc.: *See—*
Lamb, C. Paul, 4,620,597, Cl. 166-373.000.

Telefunken Electronic GmbH: *See—*
Maier, Horst; and Pahler, Gottfried, 4,621,279, Cl. 357-83.000.

Teljin Ltd.: *See—*
Tashiro, Mikio; and Tsukiyama, Kou, 4,621,020, Cl. 428-361.000.

Tellin, Incorporated: *See—*
Harrel, Robert D., 4,620,802, Cl. 384-53.000.

Telxon Corporation: *See—*
Kumar, Rajendra; and Meyerson, Robert F., 4,621,189, Cl. 235-472.000.

Temme, Karl; and Mehnert, Volker, to Carl Kurt Walther GmbH & Co. KG. Device for slide grinding. 4,620,394, Cl. 51-163.200.

Tendler, Robert K. Talking depth sounder. 4,621,348, Cl. 367-116.000.

Tensho Electric Industrial Co., Ltd.: *See—*
Kurosawa, Tadashi, 4,620,529, Cl. 128-66.000.

Tepper, Marla. Disposable baby bib. 4,620,323, Cl. 2-49.00R.

Terabayashi, Gosaku: *See—*
Murakami, Yuichi; Komuro, Kenichi; Kawai, Taneichi; Terabayashi, Gosaku; and Ohta, Hisatoshi, 4,621,223, Cl. 318-282.000.

Teramachi, Hiroshi. Unlimited sliding ball spline assembly. 4,620,351, Cl. 29-149.50R.

Teramachi, Hiroshi. Roller bearing for linear motion. 4,620,751, Cl. 384-44.000.

Terauchi, Makoto: *See—*
Aritomi, Mitsutoshi; and Terauchi, Makoto, 4,621,134, Cl. 528-337.000.

Terral, Ben D. Apparatus for establishing pipe joint seals. 4,620,349, Cl. 29-235.000.

Terrell, Jamie B.; and Pratt, Donna K., to Gearhart Industries, Inc. Chemical cutting apparatus having selective pressure bleed-off. 4,620,591, Cl. 166-63.000.

Terry, Dennis C.; and Musser, Thomas R., to Newport Corporation. Honeycomb table manufacture and clean-room compatible honeycomb tables. 4,621,006, Cl. 428-116.000.

Terumo Corporation: *See—*
Fukusawa, Hiromichi; and Monzen, Takashi, 4,620,965, Cl. 422-46.000.

Testrac, Inc.: *See—*
Faul, Donald; Broussard, Paul P.; and Granger, Donald W., 4,620,439, Cl. 73-40.700.

Tetschner, Allen M. Stove top attachment for mobile vehicles. 4,620,526, Cl. 126-56.000.

Tetzlaff, Karl-Heinz; Schmid, Dieter; and Russow, Jurgen, to Hoechst Aktiengesellschaft. Electrolysis process using liquid electrolytes and porous electrodes. 4,620,902, Cl. 204-1.00R.

Texaco Inc.: *See—*
Ang, Peter G. P., 4,620,906, Cl. 204-73.00R.
Brown, Winthrop K.; and Lankford, Frank L., Jr., 4,620,421, Cl. 62-3.000.
Hall, Wilbur L., 4,620,594, Cl. 166-263.000.
Lin, Jiang-Jen, 4,620,949, Cl. 260-525.000.

Texas Gas Development Corporation: *See—*
Gomberg, Henry J., 4,620,907, Cl. 204-157.440.

Texas Instruments Incorporated: *See—*
Howng, Wei-Yean, 4,620,438, Cl. 73-35.000.
Malhi, Satwinder D. S., 4,621,276, Cl. 357-42.000.
McAdams, Hugh P., 4,621,346, Cl. 365-227.000.
Smith, Brian M.; and Torti, Emanuel D., 4,620,761, Cl. 339-75.0MP.
Tserng, Hua Q., 4,621,239, Cl. 331-99.000.

Texas United Chemical Corp.: *See—*
Mondshine, Thomas C., 4,620,596, Cl. 166-292.000.

Textron, Inc.: *See—*
Martin, Gerald, 4,620,658, Cl. 227-152.000.

Theall, C. Earle, Jr.; Ludwig, Hans G.; and Gustin, Michael J., to Perkin-Elmer Corporation, The. R.F. impedance match control system. 4,621,242, Cl. 333-17.00M.

Theurer, Karl. Process for producing biologically active factors. 4,621,055, Cl. 435-69.000.

Thevenaz, Armand, to Brintec Systems Corporation. Connector socket. 4,620,757, Cl. 339-17.00C.

Thijs, Anita: *See—*
Vansant, Etienne; De Bievre, Paul; Peeters, Guido J.; Thijs, Anita; and Verhaert, Ingrid, 4,620,857, Cl. 55-75.000.

Thomas, Cunter: *See—*
Ulrich, Rosentreter; Thomas, Cunter; and Knorr, Andreas, 4,621,093, Cl. 514-355.000.

Thomas, Evan G.: *See—*
Hopkins, Ronald J.; Thomas, Evan G.; and Kieta, Harold J., 4,620,934, Cl. 252-79.400.

Thompson, Darrell R.: *See—*
Gertzman, Arthur A.; and Thompson, Darrell R., 4,620,541, Cl. 128-326.000.

Thompson, Vernon F., to Tomco, Inc. EGR valve test fixture. 4,620,440, Cl. 73-118.100.

Thomson Components - Mostek Corporation: *See—*
van Tran, Hiep, 4,621,208, Cl. 307-473.000.

Thomson-CSF: *See—*
Duthoit, Francois; and Desormiere, Bernard, 4,621,192, Cl. 250-225.000.
Hehlen, Robert; and Marcenac, Philippe, 4,621,261, Cl. 340-825.520.

Thomson, Hugh; and Gendron, Michel. Apparatus for nursing suckling animals. 4,620,505, Cl. 119-51.110.

Thorne, Stephen J.: *See—*
Backhouse, Alan J.; Frangou, Andrew; and Thorne, Stephen J., 4,621,112, Cl. 524-145.000.

Thurber, Scott W., to Air Products and Chemicals, Inc. Apparatus for interference-fitting male and female members. 4,620,350, Cl. 29-235.000.

Thyssen Industrie AG: *See—*
Miller, Luitpold; and Raschbichler, Hans G., 4,620,358, Cl. 29-464.000.

Tiller, Hans-Jurgen: *See—*
Garschke, Adelheid; Tiller, Hans-Jurgen; Gobel, Roland; Magnus, Brigitte; and Oppawsky, Steffen, 4,620,988, Cl. 427-223.000.

Tillich, Peter: *See—*
Pokorny, Cornel; and Tillich, Peter, 4,621,340, Cl. 364-900.000.

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Hubert, Hans-Juergen; and Tillmetz, Klaus D., 4,621,158, Cl. 564-473.000.

Timms, William E., to Oxford Research Systems Limited. Radiofrequency transducer and method of using same. 4,621,237, Cl. 324-322.000.

Tippmer, Kurt, to Carl Still GmbH & Co. KG, Firma. Method of recovering sulfur in a Claus process from vapors obtained in coke oven gas cleaning. 4,620,967, Cl. 423-236.000.

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Plyler, Gary M.; and Tisdale, Michael G., 4,620,381, Cl. 37-98.000.

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Stritzl, Karl, 4,620,719, Cl. 280-633.000.

Toa Nenryo Kogyo Kabushiki Kaisha: *See—*
Kono, Koichi; Mori, Shoichi; Miyasaka, Kenji; and Tabuchi, Jyoichi, 4,620,955, Cl. 264-41.000.

Toki, Kuni; and Sindou, Osamu, to Kett Electric Laboratory. Electric moisture meter. 4,621,228, Cl. 324-61.00R.

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Wada, Hiroto; and Nishizono, Minoru, 4,621,171, Cl. 381-113.000.

Tokushima, Takashige: *See—*
Nagao, Akihito; Yoshioka, Sadashichi; Oda, Hiroyuki; and Tokushima, Takashige, 4,620,519, Cl. 123-492.000.

Tokyo Electric Co., Ltd.: *See—*
Okamura, Kazuhiko, 4,621,295, Cl. 360-99.000.

Tokyo Sanyo Electric Co., Ltd.: *See—*
Miura, Norio, 4,621,278, Cl. 357-70.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Gotou, Mineo; and Sano, Shunichi, 4,621,371, Cl. 378-34.000.
Iwata, Kazuhide, 4,621,331, Cl. 364-513.000.
Maeda, Akira, 4,621,318, Cl. 364-200.000.
Suzuki, Kouji; Ikeda, Mitsushi; and Aoki, Toshio, 4,621,260, Cl. 340-719.000.

Tomala, Ambrose: *See—*
Brooks, Mark A.; Tomala, Ambrose; and Casey, Gary L., 4,620,511, Cl. 123-145.00A.
Brooks, Mark A.; Tomala, Ambrose; and Casey, Gary L., 4,620,512, Cl. 123-145.00A.

Tomco, Inc.: *See—*
Thompson, Vernon F., 4,620,440, Cl. 73-118.100.

Tomozawa, Minoru; Watson, E. Bruce; and Acocella, John, to Rensselaer Polytechnic Institute. Radiation coloration resistant glass. 4,620,863, Cl. 65-30.120.

Toncelli, Marcello, to Breton S.p.A. Soundproof sheath for the protection of sawing circular blades used for cutting marble, granite and hard stone. 4,620,525, Cl. 125-13.00R.

Topliss, John G.: *See—*
Butler, Donald E.; and Topliss, John G., 4,621,097, Cl. 514-421.000.

Toray Industries, Inc.: *See—*
Fujikawa, Junichi, 4,621,044, Cl. 430-281.000.
Nishikawa, Toshio; Imai, Shiro; Yagi, Kenkichi; Yoshida, Yuriko; Shimada, Masato; Nagashima, Junnosuke; and Nakamura, Teruo, 4,620,852, Cl. 8-515.000.

Toriumi, Shiro; Yamagishi, Seiichi; Yamakoshi, Yukiyoshi; Ishii, Kenjiro; and Maeda, Yutaka, to Minolta Camera Kabushiki Kaisha.

Photosensitive medium cassette-receiver system. 4,621,272, Cl. 346-134.000.
Torossian, Kevork A.; Heisler, Ralph T.; and Cox, Frederick E., to General Electric Company. Stator conductor insulator. 4,621,212, Cl. 310-260.000.
Torti, Emanuel D.: *See—*
Smith, Brian M.; and Torti, Emanuel D., 4,620,761, Cl. 339-75.0MP.
Toshiba Micro-Computer Engineering Corp.: *See—*
Suganuma, Kazuo; and Hamai, Tsuneo, 4,621,207, Cl. 307-451.000.
Toth, Andras: *See—*
Dombay, Zsolt; Grega nee Toth, Erzsebet; Nagy, Jozsef; Pavlisc-sak, Csaba; Tasi, Laszlo ; Toth, Andras; Toth, Oszkar; Vitanyi, Judit; Bihari, Ferenc; Bohus, Peter; Inczedy, Peter; Magyari, Istvan; Kertesz nee Szabo, Marianna; Wohl, Laszlo ; and Fe-renczi, Attila, 4,621,080, Cl. 514-187.000.
Toth, Oszkar: *See—*
Dombay, Zsolt; Grega nee Toth, Erzsebet; Nagy, Jozsef; Pavlisc-sak, Csaba; Tasi, Laszlo ; Toth, Andras; Toth, Oszkar; Vitanyi, Judit; Bihari, Ferenc; Bohus, Peter; Inczedy, Peter; Magyari, Istvan; Kertesz nee Szabo, Marianna; Wohl, Laszlo ; and Fe-renczi, Attila, 4,621,080, Cl. 514-187.000.
Townsend, Darold I. Fan rotor. 4,620,833, Cl. 415-211.000.
Toyo Soda Manufacturing Co., Ltd.: *See—*
Iwata, Kazuo; Takematsu, Tetsuo; Nonaka, Yuji; Nakanishi, Akira; Morinaka, Hideo; Tsuzuki, Kenji; Murakami, Mitsuyuki; and Uotani, Takeshi, 4,621,090, Cl. 514-332.000.
Toyota Jidosha Kabushiki Kaisha: *See—*
Onodera, Takayoshi; and Kagata, Tooru, 4,620,622, Cl. 192-36.000.
Takahashi, Minoru; Kano, Koichi; and Otsuka, Kan, 4,621,255, Cl. 340-347.0AD.
Toyota Jidosha Kabushikikaisha: *See—*
Murakami, Yuichi; Komuro, Kenichi; Kawai, Taneichi; Terabaya-shi, Gosaku; and Ohta, Hisatoshi, 4,621,223, Cl. 318-282.000.
Trainin, Nathan; and Burstein, Yigal, to Yeda Research & Development Company, Ltd. Novel THF compositions. 4,621,135, Cl. 530-328.000.
Trauth, Hubert: *See—*
Lechtken, Peter; Trauth, Hubert; Weiss, Stefan; and Hettche, Albert, 4,621,109, Cl. 524-83.000.
Treiber, Fritz F.: *See—*
Margraf, Dallas A.; and Treiber, Fritz F., 4,620,467, Cl. 83-389.000.
Trilogy Systems Corporation: *See—*
Amdahl, Carlton G.; Amdahl, Gene M.; and Reinschmidt, Robert, 4,621,201, Cl. 307-219.000.
Trilux-Lenze GmbH + Co. KG: *See—*
Grawe, Franz-Eugen; Grimm, Manfred; Schneppendahl, Richard; and Hasemann, Fred, 4,621,309, Cl. 362-342.000.
Tropicana Products, Inc.: *See—*
Skukowski, William T., 4,620,877, Cl. 106-23.000.
Tru-Fit Mfg., Inc.: *See—*
Kauffman, Melvin E., 4,620,729, Cl. 285-158.000.
Truog, Peter, to Ciba-Geigy Corporation. Use of nootropics. 4,620,973, Cl. 424-10.000.
Truong, Long K.: *See—*
Zwemer, Dirk A.; Beilin, Solomon I.; Truong, Long K.; and Lip-ton, Lewis T., 4,620,916, Cl. 204-299.00R.
Trutek Research, Inc.: *See—*
Shene, William R.; Nowacki, Christopher; and Brisson, Alfred G., 4,620,545, Cl. 128-328.000.
TRW Inc.: *See—*
Vetter, Ottomar H., 4,620,759, Cl. 339-45.00M.
TRW REPA Feinstanzwerk GmbH: *See—*
Fohl, Artur, 4,620,357, Cl. 29-439.000.
Tsao, George T.: *See—*
Chang, Martin M.; Tsao, George T.; and Anderson, Allen W., 4,621,164, Cl. 585-733.000.
Tschoepe, Norbert, to Siemens Aktiengesellschaft. Circuit arrangement for recording the addresses of storage cells with erroneous content. 4,621,364, Cl. 371-38.000.
Tseng, Ching-Ho. Internal combustion rotary power plant system. 4,620,514, Cl. 123-202.000.
Tserng, Hua Q., to Texas Instruments Incorporated. Gallium arsenide travelling-wave transistor oscillators for millimeter wave applica-tions. 4,621,239, Cl. 331-99.000.
Tsuchida, Akira, to Asics Corporation. Racket stringing device. 4,620,705, Cl. 273-73.00A.
Tsuchihasi, Akira; Takahashi, Ichirou; and Miyake, Norihisa, to Hita-chi, Ltd. Joint type robot. 4,620,830, Cl. 414-735.000.
Tsuji, Nobuo: *See—*
Okita, Tsutomu; Tsuji, Nobuo; Mukaida, Yoshito; Hashimoto, Hiroshi; Nakagawa, Teruo; Hashimoto, Akiyoshi; and Ogasa-wara, Takahisa, deceased, 4,621,027, Cl. 428-425.900.
Tsukiyama, Kou: *See—*
Tashiro, Mikio; and Tsukiyama, Kou, 4,621,020, Cl. 428-361.000.
Tsuno, Koichi, to Sumitomo Electric Industries, Ltd. Image observa-tion system. 4,620,769, Cl. 350-96.260.
Tsutsumi, Masaru; Hagino, Hideo; and Fujiwara, Osamu, to Sanyo Electric Co., Ltd. Fuel cell system and its vibration-proof device. 4,621,033, Cl. 429-12.000.
Tsuzuki, Kenji: *See—*
Iwata, Kazuo; Takematsu, Tetsuo; Nonaka, Yuji; Nakanishi, Akira; Morinaka, Hideo; Tsuzuki, Kenji; Murakami, Mitsuyuki; and Uotani, Takeshi, 4,621,090, Cl. 514-332.000.
Tubesing, Charlotte M., executrix: *See—*
Tubesing, William W., deceased; and Tubesing, Charlotte M., executrix, 4,620,367, Cl. 30-122.000.
Tubesing, William W., deceased; and by Tubesing, Charlotte M., execu-trix. Saw drive tensioner. 4,620,367, Cl. 30-122.000.
Tufano, Giovanni: *See—*
Palazzetti, Mario; Re Fiorentin, Stefano; and Tufano, Giovanni, 4,620,799, Cl. 374-5.000.
Turner, William C. Method of manufacturing an internally clad tubular product. 4,620,660, Cl. 228-186.000.
UBE Industries, Ltd.: *See—*
Kitoh, Ryozo; and Ikezawa, Harumi, 4,621,067, Cl. 501-136.000.
Morita, Hideyo; Akagawa, Tomohiko; and Kita, Yasuo, 4,621,115, Cl. 524-494.000.
Uchida, Hisaaki: *See—*
Kuzuya, Fumio; Kito, Kyoji; and Uchida, Hisaaki, 4,621,076, Cl. 514-48.000.
Uchida, Yoko: *See—*
Yoshida, Minoru; Yamada, Hiromichi; Uchida, Yoko; Kohno, Hideki; and Takagi, Hiroshi, 4,621,194, Cl. 250-367.000.
Uchikawa, Fusaoki; Takeuchi, Morihisa; Shimamoto, Kozo; Miyao, Kunihiko; Momiyama, Kimio; and Watarai, Hisao, to Mitsubishi Denki Kabushiki Kaisha. Moisture sensitive element. 4,621,249, Cl. 338-35.000.
Ueda, Keiko: *See—*
Nohira, Hiroyuki; and Ueda, Keiko, 4,621,151, Cl. 562-401.000.
Uemura, Seiichi; Takashima, Hiroaki; Kato, Osamu; and Nakazima, Hazime, to Nippon Oil Company. Pitch for the production of carbon fibers. 4,620,919, Cl. 208-45.000.
Ueno, Atushi; and Komeda, Tadao, to Matsushita Electric Industrial Co., Ltd. Solid-state imaging device. 4,621,275, Cl. 357-30.000.
Uesaka, Yasutaro; Fujiwara, Hideo; Hishiyama, Sadao; and Shiiki, Kazuo, to Hitachi, Ltd.; and Hitachi Maxell, Ltd. Perpendicular magnetic recording medium and manufacturing method thereof. 4,621,030, Cl. 428-607.000.
Ueshima, Michio; Takahashi, Yoshiyuki; Kitada, Ritsuo; and Nagai, Isao, to Nippon Shokubai Kagaku Kogyo Co. Ltd. Process for prepa-ration of methacrylic acid. 4,621,155, Cl. 562-534.000.
Uesugi, Michika, to Kabushiki Kaisha Toshiba. Inverter control circuit. 4,621,316, Cl. 363-132.000.
Uetsuki, Haruo: *See—*
Murakami, Hideo; and Uetsuki, Haruo, 4,620,371, Cl. 33-129.000.
Uhlenhoff, Arnold, to ITT Industries, Inc. CMOS adder using exclusive OR and/or exclusive-NOR gates. 4,621,338, Cl. 364-784.000.
Uhrner, Horst: *See—*
Schwing, Ewald; Sommer, Peter; and Uhrner, Horst, 4,620,883, Cl. 148-13.000.
Ulrich, Rosentreter; Thomas, Cunter; and Knorr, Andreas, to Bayer Aktiengesellschaft. Vaso-dilating and coronary active 4-nitrophenyl-tetrahydropyridines. 4,621,093, Cl. 514-355.000.
Ultraseal International Limited: *See—*
Young, Peter D., 4,620,991, Cl. 427-294.000.
Umminger, Robert; Friebe, Walter-Gunar; Kampe, Wolfgang; Roesch, Andronik; and Wilhelms, Otto-Henning, to Boehringer Mannheim GmbH. Thioethers and pharmaceutical compositions containing them. 4,621,098, Cl. 514-562.000.
Unger, Renate: *See—*
Lachnit-Fixson, Ursula; and Unger, Renate, 4,621,079, Cl. 514-170.000.
Unidynamics Phoenix, Inc.: *See—*
Simpson, Clarence E., 4,620,483, Cl. 102-222.000.
Union Siderurgique du Nord et de L'est de la France: *See—*
Brun, Charles, 4,620,501, Cl. 118-67.000.
United Aircraft Products, Inc.: *See—*
Pfouts, Robert R.; Wunder, John E.; and Nostadt, William, Jr., 4,620,588, Cl. 165-32.000.
United Kingdom Atomic Energy Authority: *See—*
Hoddinott, Dudley S., 4,620,984, Cl. 427-9.000.
United States of America
Agriculture: *See—*
McGovern, Terrence P.; and Burden, George S., 4,621,143, Cl. 546-245.000.
Air Force: *See—*
Koegel, Ewald; and Sheffield, Paul J., 4,620,538, Cl. 128-201.230.
Marshall, Daniel Q., 4,620,732, Cl. 285-368.000.
Army: *See—*
Jasper, Louis J., Jr.; DeSantis, Charles M.; and Baxendale, James F., 4,621,218, Cl. 315-3.600.
Energy: *See—*
Carlson, Larry W., 4,620,493, Cl. 110-346.000.
Diebold, James P.; and Scahill, John W., 4,620,795, Cl. 366-241.000.
Health and Human Services: *See—*
Daemer, Richard J.; Feinstone, Stephen M.; Gust, Ian D.; and Purcell, Robert H., 4,620,978, Cl. 424-89.000.
Hou, De-Yan, 4,620,971, Cl. 424-1.100.
National Aeronautics and Space Administration: *See—*
Banks, Bruce A.; and Rutledge, Sharon K., 4,620,898, Cl. 156-643.000.
Navy: *See—*
Gaunt, Joseph J.; and Leek, Bobby J., 4,620,733, Cl. 292-39.000.
Kim, Oh-Kil, 4,620,942, Cl. 252-500.000.
U.S. Philips Corporation: *See—*
Beyersbergen van Henegouwen, Cornelis M.; Koken, Karel G. M.; and Olierook, John C. J., 4,621,297, Cl. 360-132.000.
Gustafson, Bengt G., 4,621,262, Cl. 340-825.690.
Liebe, Johan; Geven, Andreas S. G.; Driessen, Antonius J. G. C.; and deBie, Jan R., 4,621,216, Cl. 313-613.000.

van Uijen, Cornelis M. J.; and den Boef, Johannes H., 4,621,235, Cl. 324-307.000.

United Technologies Corporation: *See—*
Karanian, Arthur J., 4,620,679, Cl. 244-53.00B.

Universal Data Systems, Inc.: *See—*
Cain, Roger W.; and Harris, Norman R., 4,621,366, Cl. 375-8.000.

Uno, Teruo: *See—*
Baba, Yoshio; Uno, Teruo; Yoshida, Hideo; and Shoji, Yoshifusa, 4,620,961, Cl. 420-542.000.

Uno, Tsuneo: *See—*
Otomo, Nobuyuki; Chiba, Hiroaki; Uno, Tsuneo; Aono, Toshiki; and Suzuki, Kozo, 4,620,995, Cl. 427-420.000.

Uotani, Takeshi: *See—*
Iwata, Kazuo; Takematsu, Tetsuo; Nonaka, Yuji; Nakanishi, Akira; Morinaka, Hideo; Tsuzuki, Kenji; Murakami, Mitsuyuki; and Uotani, Takeshi, 4,621,090, Cl. 514-332.000.

Uphoff, Heinrich: *See—*
Kuhlmann, Werner; and Uphoff, Heinrich, 4,621,002, Cl. 428-71.000.

Upjohn Company, The: *See—*
Lund, John E.; and High, Wanda B., 4,621,100, Cl. 514-573.000.

Ushida, Masayasu; Nakamura, Yukio; and Abe, Kei, to Nippondenso Co., Ltd. Rotational position detecting device for internal combustion engine. 4,620,513, Cl. 123-146.50A.

Ushiro, Yasunori; Nagashima, Shigeo; and Kawabe, Shun, to Hitachi, Ltd. Processor for carrying out vector operation wherein the same vector element is used repeatedly in succession. 4,621,324, Cl. 364-200.000.

USM Corporation: *See—*
Bell, Wilson A., 4,620,793, Cl. 366-76.000.
Potzas, Peter, 4,620,825, Cl. 411-34.000.

USV Pharmaceutical Corporation: *See—*
Loev, Bernard; and Chan, Wan-Kit, 4,621,099, Cl. 514-570.000.

Valek, John: *See—*
Miller, Roland E.; Borgardt, Henry; and Valek, John, 4,620,838, Cl. 425-135.000.

Valentin, Bernard: *See—*
Bodele, Gilbert; Duflot, Pierrick; Valentin, Bernard; and Huchette, Michel, 4,620,880, Cl. 127-60.000.

Valmet Oy: *See—*
Hyytinen, Timo, 4,620,384, Cl. 42-41.000.

Valveserve Machines Limited: *See—*
French, Peter R.; and Boore, Roger, 4,620,395, Cl. 51-241.0VS.

Vancata, Oldrich, to Asea Aktiebolag. Optical monitoring device for determining faults in a plasma burner. 4,621,184, Cl. 219-121.0PY.

Van Der Eijk, Huno; Heinerman, Jacobus J. L.; and Maxwell, Ian E., to Shell Oil Company. Catalytic cracking of hydrocarbon oils from two mixtures boiling above the gasoline range. 4,620,920, Cl. 208-86.000.

Vandermeyden, Tom R.; Dufau, Oscar R.; and Blau, Frederick, Jr., to Fluidmaster, Inc. Hot water heating system having minimum hot water use based on minimum water temperatures and time of heating. 4,620,667, Cl. 236-20.00R.

Van Duzer, John P., to Biocell Laboratories, Inc. Method for destroying microbial contamination in protein materials. 4,620,908, Cl. 204-157.680.

Van Hoye, Michael. Fluorescent penetrant crack detection. 4,621,193, Cl. 250-302.000.

Vanistendael, David M., to Davan Industries. Power clamping apparatus. 4,620,695, Cl. 269-24.000.

Vansant, Etienne; De Bievre, Paul; Peeters, Guido J.; Thijs, Anita; and Verhaert, Ingrid, to European Atomic Energy Community (Euratom). Method for a controlled change of the pore size in solids. 4,620,857, Cl. 55-75.000.

van Tran, Hiep, to Thomson Components - Mostek Corporation. CMOS output buffer. 4,621,208, Cl. 307-473.000.

van Uijen, Cornelis M. J.; and den Boef, Johannes H., to U.S. Philips Corporation. Method of and device for determining a nuclear magnetization distribution in a region of a body. 4,621,235, Cl. 324-307.000.

van Woudenberg, Jan F.: *See—*
Gloss, Erwin; Lotterbach, Gerhard; Perenthaler, Egbert; Schenk, Manfred; van Woudenberg, Jan F.; and Zucker, Udo, 4,620,420, Cl. 60-602.000.

Vapor Corporation: *See—*
Brady, Robert T.; and Guyon, James G., 4,620,490, Cl. 110-173.00R.

Vari-L Company, Inc.: *See—*
Kiser, Joseph H., 4,621,241, Cl. 331-117.00R.

Varian Associates, Inc.: *See—*
Fox, Lowell J.; and Manca, Joseph J., 4,621,219, Cl. 315-5.000.
Schwartz, Vladimir; and Freytsis, Avrum, 4,620,738, Cl. 294-64.100.

Vasilchenko, Georgy A. Boring head. 4,620,464, Cl. 82-1.200.

Vaughn, Herchel A.; and Peterson, Joe W., to Motorola, Inc. Recirculating MOS charge pump. 4,621,315, Cl. 363-60.000.

Vauhn, Quentin: *See—*
Hurd, Bruce; and Vauhn, Quentin, 4,620,786, Cl. 355-72.000.

VDO Adolf Schindling AG: *See—*
Sell, Gerhard, 4,621,306, Cl. 362-29.000.

Velo-Bind, Inc.: *See—*
Abildgaard, William H.; and Szanto, Elmer G., 4,620,724, Cl. 281-15.00R.

Venema, Harry J., to Borg-Warner Corporation. Measuring system for determining the capacitance ratio of a pair of capacitors. 4,621,227, Cl. 324-60.0CD.

Verhaert, Ingrid: *See—*
Vansant, Etienne; De Bievre, Paul; Peeters, Guido J.; Thijs, Anita; and Verhaert, Ingrid, 4,620,857, Cl. 55-75.000.

Verheyden, Julien P. H.; Martin, John C.; and McGee, Daniel P. C., to Syntex (U.S.A.) Inc. Process for preparing 2,6-substituted-9-(1,3-dihydroxy-2-propoxymethyl)-purines and certain derivatives. 4,621,140, Cl. 544-276.000.

Verrill, Dale R.; and Sessions, Samuel D. Tree delimber. 4,620,578, Cl. 144-2.00Z.

Vetter, Ottomar H., to TRW Inc. Preloaded electrical connector utilizing angularly grouped pawls for both indexing and latching of plug and receptacle components. 4,620,759, Cl. 339-45.00M.

Vezirian, Edward. Friction bearing couple. 4,620,803, Cl. 384-93.000.

Vialars, Jacques; Rossignol, Alain; Vidal, Andre ; and Sarrade, Lionel, to Electricite de France. Pole lifting apparatus. 4,620,693, Cl. 254-335.000.

Vickers, Stanley E.: *See—*
Schieser, Warren J.; Vickers, Stanley E.; and Duffey, Craig L., 4,620,411, Cl. 53-570.000.

Victor Company of Japan, Ltd.: *See—*
Kumakura, Masumi; Kawashima, Takeshi; and Sakai, Otoya, 4,620,678, Cl. 242-195.000.
Nakajima, Hiroshi; Nakane, Yoshihito; Goshima, Toshikazu; Narita, Osamu; Nishizawa, Akira; and Suzuki, Fuminari, 4,621,007, Cl. 428-206.000.

Vidal, Andre : *See—*
Vialars, Jacques; Rossignol, Alain; Vidal, Andre ; and Sarrade, Lionel, 4,620,693, Cl. 254-335.000.

Vikesland, John P., to Minnesota Mining and Manufacturing Company. Non-photosensitive transfer resist. 4,621,019, Cl. 428-347.000.

Viola, Michael S., to Polaroid Corporation. Imaging element and process with laser absorptive ink barrier layer. 4,621,040, Cl. 430-138.000.

Viranyi, Sandor: *See—*
Grega nee Toth, Erzsebet; Koppany, Eniko ; Bodi, Tibor; Nagy, Jozsef; Dombay, Zsolt; Szarvas, Tibor; Horvath, Laszlo ; Szabo nee Muranyi, Ildiko ; Marton, Jozsef; Pozsar, Bela, Jr.; Viranyi, Sandor; Simon, Peter; Keseru, Jozsef; and Eifert, Jozsef, 4,620,871, Cl. 71-92.000.

Visual Graphics Corp.: *See—*
Hurd, Bruce; and Vauhn, Quentin, 4,620,786, Cl. 355-72.000.

Vitanyi, Judit: *See—*
Dombay, Zsolt; Grega nee Toth, Erzsebet; Nagy, Jozsef; Pavliscsak, Csaba; Tasi, Laszlo ; Toth, Andras; Toth, Oszkar; Vitanyi, Judit; Bihari, Ferenc; Bohus, Peter; Inczedy, Peter; Magyari, Istvan; Kertesz nee Szabo, Marianna; Wohl, Laszlo ; and Ferenczi, Attila, 4,621,080, Cl. 514-187.000.

Vivitar Corporation: *See—*
Moskovich, Jacob, 4,620,774, Cl. 350-461.000.

Vock, Manfred H.: *See—*
Mookherjee, Braja D.; Chant, Bernard J.; Evers, William J.; Wilson, Richard A.; Zampino, Michael J.; and Vock, Manfred H., 4,620,945, Cl. 252-522.00R.

Voelger, Karl-Dieter: *See—*
Borchard, Ulrich; Mutschler, Ernst; Moehrke, Werner; Voelger, Karl-Dieter; and Wolf, Erwin, 4,621,085, Cl. 514-249.000.

Vogg, Hubert; Braun, Hartmut; and Jindra, Gabriele, to Kernforschungszentrum Karlsruhe GmbH. Process for purifying flue gas. 4,620,492, Cl. 110-345.000.

Vogt, Walter J. Fingerboard for stringed instruments. 4,620,470, Cl. 84-314.00R.

Voitov, Vladimir G.: *See—*
Stepanenko, Alexandr V.; Voitov, Vladimir G.; Karpitsky, Viktor S.; and Bartashevich, Svyatoslav A., 4,620,432, Cl. 72-73.000.

Volkmar, Ralf R., to Siemens Aktiengesellschaft. Drive for a vacuum switch. 4,621,175, Cl. 200-335.000.

Vollstedt, Thomas J.: *See—*
Meidl, John A.; and Vollstedt, Thomas J., 4,620,563, Cl. 137-572.000.

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Polk, Gary C., 4,620,669, Cl. 239-120.000.

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Loggins, Jack; Chester, Walt; and Walker, Leon, 4,620,346, Cl. 28-295.000.

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Jones, Leo V., Jr.; and Walsh, A. Lee, 4,621,354, Cl. 370-13.000.

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Butler, Donald E.; and Topliss, John G., 4,621,097, Cl. 514-421.000.
Capps, David B., 4,621,086, Cl. 514-287.000.

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Berg, Lloyd; and Warren, Karl J., 4,620,901, Cl. 203-51.000.

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Conant, Richard W., 4,620,686, Cl. 248-415.000.

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Gott, Erich, 4,620,928, Cl. 210-603.000.

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Nishikawa, Mitsuyo; Kurihara, Nobuo; Sato, Yoshio; Watanabe, Atsumi; Higashi, Toshihiko; Miyagaki, Hisanori; Yokogawa, Atsushi; and Shimada, Yoshihiro, 4,620,491, Cl. 110-185.000.

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Maeda, Masahiko; and Watanabe, Naotochi, 4,620,939, Cl. 252-301.170.

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Uchikawa, Fusaoki; Takeuchi, Morihisa; Shimamoto, Kozo; Miyao, Kunihiko; Momiyama, Kimio; and Watarai, Hisao, 4,621,249, Cl. 338-35.000.

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Johnston, Daniel U.; Sowash, Thomas R.; and Watson, Richard D., 4,620,620, Cl. 188-319.000.

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Goodburn, William H.; and Waugh, Robert E., 4,620,985, Cl. 427-55.000.

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Weber, James L., to Rockwell International Corporation. Automatic brake adjuster. 4,620,617, Cl. 188-196.0BA.

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Yau, Leopoldo D.; Gasser, Robert A., Jr.; Week, Kenneth R., Jr.; Yu, Jick M.; and Chin, David D., 4,620,986, Cl. 427-93.000.

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Meyer, Horst; Wehinger, Egbert; Garthoff, Bernward; and Kazda, Stanislav, 4,621,082, Cl. 514-212.000.

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O'Callaghan, Cynthia H.; Ayres, Barry E.; Livermore, David G. H.; Newall, Christopher E.; and Weir, Niall G., 4,621,081, Cl. 514-206.000.

Weiss, Stefan: *See—*
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Weiss, Wolfram: *See—*
Petersen, Harro; Immel, Gunther; Weiss, Wolfram; Schmidt, Horst; and Busse, Gerd, 4,621,133, Cl. 528-252.000.

Wella Aktiengesellschaft: *See—*
Bachmann, Heinrich; and Portmann, Plato, 4,620,850, Cl. 8-406.000.

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Fremerey, Johan K.; and Weller, Albrecht, 4,620,752, Cl. 310-90.500.

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Eckstein, Rolf; Buhl, Siegfried; and Krumm, Jurgen, 4,620,824, Cl. 409-233.000.

Wertz, Keith J.; and Graham, Emmett. Resilient plug closure. 4,620,642, Cl. 220-307.000.

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Driggers, John M., 4,620,662, Cl. 228-227.000.
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Heinrich, Theodore M.; and Frost, Lawrence W., 4,621,231, Cl. 324-142.000.
McKendree, Francis S.; and Zomp, John M., 4,620,445, Cl. 73-647.000.
Morris, Arnold M.; and Morris, Kim E., 4,620,615, Cl. 187-22.000.
Rowe, Neal E., 4,621,303, Cl. 361-338.000.
Smith, James D. B., 4,621,025, Cl. 428-414.000.
Weikel, Scott J., 4,621,330, Cl. 364-483.000.
Wilson, John F.; Gjertsen, Robert K.; and Shallenberger, John M., 4,620,960, Cl. 376-446.000.

Westvaco Corporation: *See—*
Plyler, Gary M.; and Tisdale, Michael G., 4,620,381, Cl. 37-98.000.

Wetor, Clyde R.: *See—*
Cuba, Ronald R.; Heidner, Richard C.; Wetor, Clyde R.; and Fiedler, Bruce H., 4,620,575, Cl. 180-307.000.

Wexler, Howard. Multi-colored anaglyphs. 4,620,770, Cl. 350-132.000.

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Wheelock, Franklin R.: *See—*
Hughes, William J.; and Wheelock, Franklin R., 4,620,461, Cl. 81-461.000.

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Whirlpool Corporation: *See—*
Kristof, Mark J.; and Spencer, Donald J., 4,621,180, Cl. 219-10.55R.

Whittaker, Darren: *See—*
Braun, Jerome M.; Chong, David; and Whittaker, Darren, 4,621,319, Cl. 364-200.000.

Wick, Alexander; Frost, Jonathan; and Lardenois, Patrick, to Synthelabo. Anti-anoxic furo- or pyrrolo-pyridine compounds and pharmaceutical compositions containing them. 4,621,087, Cl. 514-300.000.

Wiechard, Charles A., to AT&T Technologies, Inc. Methods of and apparatus for molding articles through a balanced, removable runner system. 4,620,958, Cl. 264-297.200.

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Wiemer, Klaus: *See—*
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Wiley, Edward R., to Boeing Company, The. Bearing intersection deghosting by altitude comparison system and methods. 4,621,267, Cl. 342-462.000.

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Umminger, Robert; Friebe, Walter-Gunar; Kampe, Wolfgang; Roesch, Androniki; and Wilhelms, Otto-Henning, 4,621,098, Cl. 514-562.000.

Wilkinson, John S., to Imperial Chemical Industries plc. Electrolysis of alkali metal chloride solution with subsequent production of alkali metal carbonates and hypochlorites. 4,620,969, Cl. 423-421.000.

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Fracalossi, Roland N.; Greenhouse, Walter V. V.; and Sollers, Joseph S., 4,621,106, Cl. 521-130.000.

Williams, Fred E.: *See—*
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Williams, H. Albert; and Williams, Janet L., to Bio Clinic Corporation. Convoluted support pad for prevention of decubitus ulcers and apparatus for making same. 4,620,337, Cl. 5-464.000.

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Wilson, Jerrine: *See—*
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Wilson, John F.; Gjertsen, Robert K.; and Shallenberger, John M., to Westinghouse Electric Corp. Method and apparatus for removably mounting a top nozzle on a nuclear reactor fuel assembly. 4,620,960, Cl. 376-446.000.

Wilson, Richard A.: *See—*
Mookherjee, Braja D.; Chant, Bernard J.; Evers, William J.; Wilson, Richard A.; Zampino, Michael J.; and Vock, Manfred H., 4,620,945, Cl. 252-522.00R.

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Winderlich, Hans-Georg: *See—*
Stockburger, Hermann; and Winderlich, Hans-Georg, 4,620,727, Cl. 283-82.000.
Stockburger, Hermann; and Winderlich, Hans-Georg, 4,621,188, Cl. 235-382.000.

Wingler, Frank; Koch, Otto; Lindner, Christian; and Reinking, Klaus, to Bayer Aktiengesellschaft. Acrylonitrile-free polycarbonate blends. 4,621,117, Cl. 525-67.000.

Winter, Rudolf; Horner, Albert; and Lindner, Adalbert, to Siemens Aktiengesellschaft. Method and apparatus for placing a hook-up wire on a mounting board. 4,620,889, Cl. 156-166.000.

Witt, Raymond H. Green sand mold filling system. 4,620,584, Cl. 164-160.100.

Wix, John. Ventilated toilet seat. 4,620,329, Cl. 4-217.000.

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Dombay, Zsolt; Grega nee Toth, Erzsebet; Nagy, Jozsef; Pavliscsak, Csaba; Tasi, Laszlo ; Toth, Andras; Toth, Oszkar; Vitanyi, Judit; Bihari, Ferenc; Bohus, Peter; Inczedy, Peter; Magyari, Istvan; Kertesz nee Szabo, Marianna; Wohl, Laszlo ; and Ferenczi, Attila, 4,621,080, Cl. 514-187.000.

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Wolf, Erwin: *See—*
Borchard, Ulrich; Mutschler, Ernst; Moehrke, Werner; Voelger, Karl-Dieter; and Wolf, Erwin, 4,621,085, Cl. 514-249.000.

Wolf, Karl, to J. M. Voith GmbH. Breast box nozzle for a paper machine. 4,620,899, Cl. 162-344.000.

Wolff, Siegfried: *See—*
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Woodworth, John L.; and Lynch, John M., to Kidde, Inc. Lubricating liquid dispenser. 4,620,647, Cl. 222-215.000.

Woolf, Harold L., to East Penn Manufacturing Co., Inc. Combination battery booster cable connector. 4,620,767, Cl. 339-255.00P.

Wormgoor, Arend J., to A. J. Wormgoor B.V. Slip incubator for a chicken brooder plant. 4,620,504, Cl. 119-35.000.

Wright, Christopher T.: *See—*
Baxter, Paul L.; MacKirdy, Iain S.; and Wright, Christopher T., 4,620,935, Cl. 252-99.000.

Wright, Frederick A., to Paper Applications International, Inc. Metal-coated hollow microspheres. 4,621,024, Cl. 428-404.000.

Wuchenauer, Johann, to Hydromatik GmbH. Control device for a hydrostatic gear driven by a drive engine. 4,620,417, Cl. 60-431.000.

Wunder, John E.: *See—*
Pfouts, Robert R.; Wunder, John E.; and Nostadt, William, Jr., 4,620,588, Cl. 165-32.000.

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Wyleta, Robert M.: *See—*
Pulciano, Sam C.; Mikas, Raymond; and Wyleta, Robert M., 4,620,434, Cl. 72-347.000.

Xerox Corporation: *See—*
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Kazmaier, Peter M.; Baranyi, Giuseppa; and Loutfy, Rafik O., 4,621,038, Cl. 430-59.000.
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Yagi, Kenkichi: *See—*
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Yamada, Hiromichi: *See—*
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Yamagishi, Seiichi: *See—*
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Yamaguchi, Fumio: *See—*
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Yamaguchi, Ikuo, to Mazda Motor Corporation. Method of evaluating tightening condition of screw. 4,620,450, Cl. 73-862.230.

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Yamamoto, Fumihiro: *See—*
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Yamamoto, Suguru: *See—*
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Yamanaka, Yoshinobu: *See—*
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Yamasawa, Akira: *See—*
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Yamashita, Hiroshi; and Muto, Kenkichi, to Ricoh Company, Ltd. Surface treatment method for magnetic particles. 4,620,987, Cl. 427-131.000.

Yamazaki, Masaya: *See—*
Tanaka, Tatsuo; Miyazaki, Koichi; Kuwahara, Eiji; Yamazaki, Masaya; and Morita, Keiichi, 4,620,424, Cl. 62-222.000.

Yamazoki Machinery Works, Ltd.: *See—*
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Yanagihashi, Kikuji: *See—*
Sakamaki, Hiroshi; Horikoshi, Yukio; and Yanagihashi, Kikuji, 4,620,837, Cl. 418-173.000.

Yanagishita, Hitoshi: *See—*
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Yano, Shinsuke: *See—*
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Yashiki, Yuichi, to Canon Kabushiki Kaisha. Coating device and coating method by use thereof. 4,620,996, Cl. 427-430.100.

Yashiro, Hirokatsu; and Ohno, Jiro, to Nippon Steel Corporation. Method and apparatus for measuring water level in a well. 4,621,264, Cl. 342-124.000.

Yau, Leopoldo D.; Gasser, Robert A., Jr.; Week, Kenneth R., Jr.; Yu, Jick M.; and Chin, David D., to Intel Corporation. MOS rear end processing. 4,620,986, Cl. 427-93.000.

Yeda Research & Development Company, Ltd.: *See—*
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Yim, Byung D. Golf bag stand. 4,620,682, Cl. 248-96.000.

Yip, James K.; and Novacek, William J., to Eaton Corporation. Load sensing system. 4,620,416, Cl. 60-384.000.

Yoda, Kuniichi; and Kawasaki, Kaoru, to TDK Corporation. Magnetic recording medium. 4,621,018, Cl. 428-329.000.

Yoder, Joseph W.: *See—*
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Yokogawa, Atsushi: *See—*
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Yoshida, Hideo: *See—*
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Yoshida Kogyo K. K.: *See—*
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Yoshida, Minoru; Yamada, Hiromichi; Uchida, Yoko; Kohno, Hideki; and Takagi, Hiroshi, to Hitachi, Ltd.; and Hitachi Medical Corporation. Radiation detecting apparatus. 4,621,194, Cl. 250-367.000.

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Yoshida, Yuriko: *See—*
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Kimura, Shoji; Shimatani, Shunichi; and Yoshimura, Atsuo, 4,620,900, Cl. 202-172.000.

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Yoshinaga, Kenji: *See*—
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Yoshino Kogyosho Co., Ltd.: *See*—
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Nagao, Akihito; Yoshioka, Sadashichi; Oda, Hiroyuki; and Tokushima, Takashige, 4,620,519, Cl. 123-492.000.

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Yufu, Kuniaki: *See*—
Sueki, Hiroshi; and Yufu, Kuniaki, 4,620,896, Cl. 156-471.000.

Yui, Yasuo; and Kawamo, Kazunori, to Nissan Shatai Co. Ltd. Slide door locking device for vehicles during feeding of fuel to a fuel tank positioned near a slide door. 4,620,744, Cl. 296-155.000.

Yuzurihara, Itsuo; and Arai, Masami, to Kabushiki Kaisha Kyosan Seisakusho. Switching regulator. 4,621,312, Cl. 363-26.000.

Zaehringer, Edmund: *See*—
Micic, Ljubo; and Zaehringer, Edmund, 4,621,374, Cl. 455-603.000.

Zampino, Michael J.: *See*—
Mookherjee, Braja D.; Chant, Bernard J.; Evers, William J.; Wilson, Richard A.; Zampino, Michael J.; and Vock, Manfred H., 4,620,945, Cl. 252-522.00R.

Zartman, David L., to New Mexico State University Foundation. Apparatus for insertion of an intravaginal article. 4,620,534, Cl. 128-127.000.

Zechlin, Richard: *See*—
Henderson, Robert M.; and Zechlin, Richard, 4,620,521, Cl. 123-599.000.

Zelenetsky, Vladimir E.: *See*—
Shishov, Nikolai M.; Zelenetsky, Vladimir E.; Demina, Nadezhda A.; Bondarev, Ivan M.; Cherny, Alexandr N.; Moskvitin, Valery A.; and Rylov, Evgeny E., deceased, 4,620,847, Cl. 604-58.000.

Zenith Electronics Corporation: *See*—
Alvord, Robert J.; Amberg, Robert; Fegan, Michael T.; and Kadlec, Joseph, 4,621,240, Cl. 331-113.00R.
Bart, Stan; and Srivastava, Gopal K., 4,621,289, Cl. 358-153.000.
Dobrovolny, Pierre; and Nicoletto, Dominic J., 4,621,245, Cl. 333-202.000.
Kiteley, Kenneth J., 4,621,313, Cl. 363-49.000.
Lee, Sae D., 4,621,294, Cl. 358-237.000.
Matis, Louis J., 4,621,293, Cl. 358-231.000.

ZF-Herion Systemtechnik GmbH: *See*—
Marsland, George E.; Marschner, Heinz; Wiemer, Klaus; Weyer, Thomas; and Knoblauch, Hubert, 4,620,819, Cl. 405-185.000.

Zimmer, Johannes. Method of and system for monitoring and applying liquid foam to a substrate. 4,620,983, Cl. 427-8.000.

Zimpro Inc.: *See*—
Meidl, John A.; and Vollstedt, Thomas J., 4,620,563, Cl. 137-572.000.

Zinck, Wolf D. Ground working machine for hoeing, tilling and the like. 4,620,599, Cl. 172-42.000.

Zingher, Arthur R.: *See*—
Chang, Tai-Hon P.; Coane, Philip J.; Hohn, Fritz-Jurgen; Molzen, Walter W., Jr.; and Zingher, Arthur R., 4,621,232, Cl. 324-158.00R.

Zink, Edward F.: *See*—
Crouch, Jack S.; and Zink, Edward F., 4,621,230, Cl. 324-110.000.

Zomp, John M.: *See*—
McKendree, Francis S.; and Zomp, John M., 4,620,445, Cl. 73-647.000.

Zownir, Michael; and Zownir, Myron. Cue tip trimmer. 4,620,370, Cl. 30-494.000.

Zownir, Myron: *See*—
Zownir, Michael; and Zownir, Myron, 4,620,370, Cl. 30-494.000.

Zucker, Udo: *See*—
Gloss, Erwin; Lotterbach, Gerhard; Perenthaler, Egbert; Schenk, Manfred; van Woudenberg, Jan F.; and Zucker, Udo, 4,620,420, Cl. 60-602.000.

Zwemer, Dirk A.; Beilin, Solomon I.; Truong, Long K.; and Lipton, Lewis T. Degradation retardants for electrophoretic display devices. 4,620,916, Cl. 204-299.00R.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 4TH DAY OF NOVEMBER, 1986

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Tsuge, Masami; Uematsu, Shinichi; Ono, Yotsuo; Eiga, Shokichi; and Makita, Minoru, Re. 32,277, Cl. 210-500.290.

Bruchet, Michel, to UNELEC S.A. Interchangeable tripping device for a circuit-breaker. Re. 32,279, Cl. 335-42.000.

Burchett, Clive J., to Vickers Public Limited Company. Marine tether anchoring device. Re. 32,274, Cl. 114-297.000.

Eiga, Shokichi: *See*—
Tsuge, Masami; Uematsu, Shinichi; Ono, Yotsuo; Eiga, Shokichi; and Makita, Minoru, Re. 32,277, Cl. 210-500.290.

Guild, William H. Apparatus for selectively varying the longitudinal position of a skier on a pair of skis. Re. 32,273, Cl. 36-117.000.

Joichi, Yoshiro: *See*—
Yokota, Teppei; and Joichi, Yoshiro, Re. 32,278, Cl. 307-130.000.

Kabushiki Kaisha Ishida Koki Seisakusho: *See*—
Kakita, Yukio; and Mikami, Yoshiharu, Re. 32,276, Cl. 177-25.000.

Kakita, Yukio; and Mikami, Yoshiharu, to Kabushiki Kaisha Ishida Koki Seisakusho. Combinatorial weighing system with discharge control. Re. 32,276, Cl. 177-25.000.

Makita, Minoru: *See*—
Tsuge, Masami; Uematsu, Shinichi; Ono, Yotsuo; Eiga, Shokichi; and Makita, Minoru, Re. 32,277, Cl. 210-500.290.

Mikami, Yoshiharu: *See*—
Kakita, Yukio; and Mikami, Yoshiharu, Re. 32,276, Cl. 177-25.000.

New Mexico State University Foundation: *See*—
Zartman, David L., Re. 32,275, Cl. 128-1.00R.

Ono, Yotsuo: *See*—
Tsuge, Masami; Uematsu, Shinichi; Ono, Yotsuo; Eiga, Shokichi; and Makita, Minoru, Re. 32,277, Cl. 210-500.290.

Sony Corporation: *See*—
Yokota, Teppei; and Joichi, Yoshiro, Re. 32,278, Cl. 307-130.000.

Tsuge, Masami; Uematsu, Shinichi; Ono, Yotsuo; Eiga, Shokichi; and Makita, Minoru, to Asahi Kasei Kogyo Kabushiki Kaisha. Hollow fibers of cuprammonium cellulose and a process of the manufacture of same. Re. 32,277, Cl. 210-500.290.

Uematsu, Shinichi: *See*—
Tsuge, Masami; Uematsu, Shinichi; Ono, Yotsuo; Eiga, Shokichi; and Makita, Minoru, Re. 32,277, Cl. 210-500.290.

UNELEC S.A.: *See*—
Bruchet, Michel, Re. 32,279, Cl. 335-42.000.

Vickers Public Limited Company: *See*—
Burchett, Clive J., Re. 32,274, Cl. 114-297.000.

Yokota, Teppei; and Joichi, Yoshiro, to Sony Corporation. Muting circuit. Re. 32,278, Cl. 307-130.000.

Zartman, David L., to New Mexico State University Foundation. Intravaginal anchoring device. Re. 32,275, Cl. 128-1.00R.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Bulk Lift International Incorporated: *See*—
Nattrass, Peter J., B1 4,307,764, Cl. 383-17.000.

Craig, Gary W.; and Langston, Jack W., to Loffland Brothers Company. Elevating catwalk. B1 4,365,692, 11-4-86, Cl. 187-8.720.

Goto, Toshio: *See*—
Masahiro, Aya; Saito, Junichi; Yasui, Kazuomi; Shiokawa, Kozo; Morishima, Norihisa; and Goto, Toshio, B1 4,474,600, Cl. 71-92.000.

Hand, George E., to Kerr Concrete Pipe Company. Apparatus for forming concrete pipe of uniform density including control means to vary feed rate of concrete/aggregate as function of packerhead torque. B1 4,406,605, 11-4-86, Cl. 425-145.000.

Kerr Concrete Pipe Company: *See*—
Hand, George E., B1 4,406,605, Cl. 425-145.000.

Langston, Jack W.: *See*—
Craig, Gary W.; and Langston, Jack W., B1 4,365,692, Cl. 187-8.720.

Loffland Brothers Company: *See*—
Craig, Gary W.; and Langston, Jack W., B1 4,365,692, Cl. 187-8.720.

Masahiro, Aya; Saito, Junichi; Yasui, Kazuomi; Shiokawa, Kozo; Morishima, Norihisa; and Goto, Toshio, to Nihon Tokushu Noyaku Seizo K.K. Herbicidally active novel substituted phenylsulfonylurea derivatives. B1 4,474,600, 11-4-86, Cl. 71-92.000.

Morishima, Norihisa: *See*—
Masahiro, Aya; Saito, Junichi; Yasui, Kazuomi; Shiokawa, Kozo; Morishima, Norihisa; and Goto, Toshio, B1 4,474,600, Cl. 71-92.000.

Nattrass, Peter J., to Bulk Lift International Incorporated. Bulk material transport bag. B1 4,307,764, 11-4-86, Cl. 383-17.000.

Nihon Tokushu Noyaku Seizo K.K.: *See*—
Masahiro, Aya; Saito, Junichi; Yasui, Kazuomi; Shiokawa, Kozo; Morishima, Norihisa; and Goto, Toshio, B1 4,474,600, Cl. 71-92.000.

Saito, Junichi: *See*—
Masahiro, Aya; Saito, Junichi; Yasui, Kazuomi; Shiokawa, Kozo; Morishima, Norihisa; and Goto, Toshio, B1 4,474,600, Cl. 71-92.000.

Shimizu, Takaetsu. Nail file. B1 3,809,101, 11-4-86, Cl. 132-76.400.

Shiokawa, Kozo: *See*—
Masahiro, Aya; Saito, Junichi; Yasui, Kazuomi; Shiokawa, Kozo; Morishima, Norihisa; and Goto, Toshio, B1 4,474,600, Cl. 71-92.000.

Yasui, Kazuomi: *See*—
Masahiro, Aya; Saito, Junichi; Yasui, Kazuomi; Shiokawa, Kozo; Morishima, Norihisa; and Goto, Toshio, B1 4,474,600, Cl. 71-92.000.

LIST OF DESIGN PATENTEES

AB Profilproduktor: *See*—
Kilenstam, Bjorn, 286,573, Cl. D25-67.000.

Acufex Microsurgical Inc.: *See*—
Lichtman, Philip R.; and Strahan, John C., 286,567, Cl. D24-28.000.

Adams Company, The: *See*—
Adams, John S., 286,476, Cl. D6-416.000.
Adams, John S., 286,477, Cl. D6-416.000.
Adams, John S., 286,502, Cl. D8-307.000.

Adams, John S., to Adams Company, The. Fireplace tool support. 286,476, 11-4-86, Cl. D6-416.000.

Adams, John S., to Adams Company, The. Fireplace tool support. 286,477, 11-4-86, Cl. D6-416.000.

Adams, John S., to Adams Company, The. Handle for a fireplace tool support. 286,502, 11-4-86, Cl. D8-307.000.

Alternate Resources Limited: *See*—
Attwood, Stephen M., 286,465, Cl. D3-61.000.

AMC Appliances, Division of Algonquin Mercantile Corporation: *See—*
Lastuck, Leonard V., 286,494, Cl. D7-363.000.
American Commercial, Incorporated: *See—*
Laslo, Larry R., 286,487, Cl. D7-5.000.
Arciero, Osvaldo, to Denroy Plastics Limited. Brush handle. 286,469, 11-4-86, Cl. D4-138.000.
Arthur, James R., Jr., to Marathon Corporation. Chair frame. 286,472, 11-4-86, Cl. D6-379.000.
AT&T Information Systems Inc.: *See—*
Felix, Cristian J.; Kelly, Thomas J.; Nelson, Richard F., Jr.; Sylvester, Gordon E.; and Tyler, Daniel W., 286,533, Cl. D14-106.000.
Attwood, Stephen M., to Alternate Resources Limited. Key holder. 286,465, 11-4-86, Cl. D3-61.000.
Au Electric Corporation: *See—*
Au, Sik-Kee, 286,513, Cl. D10-106.000.
Au, Sik-Kee, to Au Electric Corporation. Container for an alarm sensor. 286,513, 11-4-86, Cl. D10-106.000.
Barthropp, Francis M. L. Toy gun. 286,558, 11-4-86, Cl. D21-147.000.
Barthropp, Francis M. L. Toy gun. 286,559, 11-4-86, Cl. D21-147.000.
Beane, Lonnie R.: *See—*
Beck, Marion L.; Beane, Lonnie R.; and Norris, Billy, 286,536, Cl. D15-127.000.
Beck, Marion L.; Beane, Lonnie R.; and Norris, Billy. Profile planer. 286,536, 11-4-86, Cl. D15-127.000.
Berghash, Robert, to Brimms Inc. Combination toothbrush and container for same. 286,467, 11-4-86, Cl. D4-108.000.
Berk-Beccon B.V.: *See—*
Broere, Carl J., 286,488, Cl. D7-17.000.
Black & Decker, Inc.: *See—*
Pugh, Timothy G.; Gogoll, Thornton H.; McCloskey, Don R.; and Lacher, Vernon R., 286,579, Cl. D26-85.000.
Blomdahl, Lars G. C., to Sparring Hyllsystem AB. Combined wall mount and upright standard. 286,495, 11-4-86, Cl. D8-373.000.
Bobrovniczky, Bert, to Noma Inc. Cord reel housing. 286,503, 11-4-86, Cl. D8-359.000.
Brimms Inc.: *See—*
Berghash, Robert, 286,467, Cl. D4-108.000.
Broere, Carl J., to Berk-Beccon B.V. Tureen. 286,488, 11-4-86, Cl. D7-17.000.
Brunner, Merlin A.; Draheim, Harvey J.; and Hassett, Thomas, to Simmons Universal Corporation. Crib footboard panel. 286,480, 11-4-86, Cl. D6-494.000.
Bulgari, Marina, to Marina B.Creation, S.A. Necklace. 286,517, 11-4-86, Cl. D11-6.000.
Bunin, Elinor B.: *See—*
Holloman, Charles J.; and Bunin, Elinor B., 286,534, Cl. D14-111.000.
Candiliotis, Gerasimos, to Uniroyal Tire Company, Inc. Pneumatic tire tread and buttress. 286,523, 11-4-86, Cl. D12-146.000.
Carlson, Arthur R. Colander. 286,490, 11-4-86, Cl. D7-47.000.
Carrier Corporation: *See—*
Drucker, Alan S.; and Kwok, King H., 286,565, Cl. D23-155.000.
Carson's, Inc.: *See—*
Culler, Randy R., 286,474, Cl. D6-381.000.
Case, Robert; Holland, A. Ronald; and Kennedy, Joe H., to Syntex (U.S.A.) Inc. Cabinet door or similar article. 286,481, 11-4-86, Cl. D6-510.000.
Cautereels, Victor J. J.: *See—*
Daenen, Robert H. C. M.; and Cautereels, Victor J. J., 286,496, Cl. D7-388.000.
Daenen, Robert H. C. M.; and Cautereels, Victor J. J., 286,497, Cl. D7-388.000.
Cetus Corporation: *See—*
Williams, Fred G., 286,570, Cl. D24-55.000.
Chavez, Michael. Toothbrush container. 286,482, 11-4-86, Cl. D6-534.000.
Chih-Tien, Lu. Pen stand. 286,553, 11-4-86, Cl. D19-82.000.
Chodat, Jean-Pierre, to Fabrique Ebel, Societe Anonyme. Wristwatch bracelet. 286,516, 11-4-86, Cl. D11-3.000.
Clover Mfg. Co., Ltd.: *See—*
Okada, Hidekazu, 286,505, Cl. D9-307.000.
Combi Co., Ltd.: *See—*
Nakao, Shinroku; Ishii, Yoshiyasu; and Ishii, Kenshun, 286,569, Cl. D24-54.000.
Culler, Randy R., to Carson's, Inc. Seat. 286,474, 11-4-86, Cl. D6-381.000.
Daenen, Robert H. C. M.; and Cautereels, Victor J. J., to Dart Industries Inc. Drain tray for a food storage container. 286,496, 11-4-86, Cl. D7-388.000.
Daenen, Robert H. C. M.; and Cautereels, Victor J. J., to Dart Industries Inc. Drain tray for a food storage container. 286,497, 11-4-86, Cl. D7-388.000.
Dart Industries Inc.: *See—*
Daenen, Robert H. C. M.; and Cautereels, Victor J. J., 286,496, Cl. D7-388.000.
Daenen, Robert H. C. M.; and Cautereels, Victor J. J., 286,497, Cl. D7-388.000.
Denroy Plastics Limited: *See—*
Arciero, Osvaldo, 286,469, Cl. D4-138.000.
Dorrell, Jeffery W.: *See—*
Goble, Samuel M., Jr.; and Dorrell, Jeffery W., 286,486, Cl. D6-611.000.
Draghicchio, Pietro, to Rockwell-Rimoldi S.p.A. Sewing machine. 286,535, 11-4-86, Cl. D15-69.000.
Drago, Joseph R. Disposable cup holder. 286,507, 11-4-86, Cl. D9-415.000.
Draheim, Harvey J.: *See—*
Brunner, Merlin A.; Draheim, Harvey J.; and Hassett, Thomas, 286,480, Cl. D6-494.000.
Drucker, Alan S.; and Kwok, King H., to Carrier Corporation. Indoor fan coil cabinet. 286,565, 11-4-86, Cl. D23-155.000.
Duwell, Michael J.; and Haas, Charles J., to Shopsmith, Inc. Support frame for a power tool. 286,538, 11-4-86, Cl. D15-141.000.
Emring, David A. Combined barbecue and cart therefor. 286,492, 11-4-86, Cl. D7-334.000.
Envall, Bjorn E. A.; and Giugiaro, Giorgetto, to Saab-Scania Aktiebolag. Combined rear window and trunk lid for an automobile. 286,527, 11-4-86, Cl. D12-183.000.
Envall, Bjorn E. A.: *See—*
Wardle, Geoffrey P.; and Envall, Bjorn E. A., 286,526, Cl. D12-176.000.
Erlendson, Ronald R. Mechanical writing device. 286,549, 11-4-86, Cl. D19-55.000.
Fabrique Ebel, Societe Anonyme: *See—*
Chodat, Jean-Pierre, 286,516, Cl. D11-3.000.
Schoepfer, Eddy, 286,510, Cl. D10-32.000.
Felix, Cristian J.; Kelly, Thomas J.; Nelson, Richard F., Jr.; Sylvester, Gordon E.; and Tyler, Daniel W., to AT&T Information Systems Inc. Communication terminal housing. 286,533, 11-4-86, Cl. D14-106.000.
Floyd, Arthur G. Wire reel rack for electricians. 286,493, 11-4-86, Cl. D8-358.000.
Frizzell, Jenneth R. Television magazine holder. 286,485, 11-4-86, Cl. D6-573.000.
Fuchs, Kathryn J. Combined bottle, brush and holder therefor. 286,468, 11-4-86, Cl. D4-114.000.
Funahashi, Tatsuro, to Shachihata Industrial Co., Ltd. Felt tip pen. 286,546, 11-4-86, Cl. D19-43.000.
Giraco, Antoine. Decal or the like. 286,554, 11-4-86, Cl. D20-11.000.
Giugiaro, Giorgetto: *See—*
Envall, Bjorn E. A.; and Giugiaro, Giorgetto, 286,527, Cl. D12-183.000.
Goble, Samuel M., Jr.; and Dorrell, Jeffery W. Terry cloth lounge chair cover or the like. 286,486, 11-4-86, Cl. D6-611.000.
Gogoll, Thornton H.: *See—*
Pugh, Timothy G.; Gogoll, Thornton H.; McCloskey, Don R.; and Lacher, Vernon R., 286,579, Cl. D26-85.000.
Gulf Coast Aqua Leisure, Inc.: *See—*
Wolfe, Henry S., 286,560, Cl. D23-3.000.
Haas, Charles J.: *See—*
Duwell, Michael J.; and Haas, Charles J., 286,538, Cl. D15-141.000.
Haber, Lenore. Protective shoe cover. 286,460, 11-4-86, Cl. D2-314.000.
Hagedorn, Leonhard; and Schulein, Rolf-Gunter, to Leifheit AG. Rack for corkscrew. 286,483, 11-4-86, Cl. D6-553.000.
Hamilton Beach Inc.: *See—*
Levin, Monte L., 286,491, Cl. D7-139.000.
Hardmark, Ragnar, to Onspot AB. Anti skid chain unit for vehicle tires. 286,524, 11-4-86, Cl. D12-154.000.
Hashimoto, Masanori, to Ricoh Company, Ltd. Sorter for electrophotographic copying machine. 286,539, 11-4-86, Cl. D16-32.000.
Hashimoto, Masanori, to Ricoh Company, Ltd. Document feeder for electrophotographic copying machine. 286,540, 11-4-86, Cl. D16-32.000.
Hassett, Thomas: *See—*
Brunner, Merlin A.; Draheim, Harvey J.; and Hassett, Thomas, 286,480, Cl. D6-494.000.
Hatakenaka, Kenji, to Sumitomo Rubber Ltd. Vehicle tire. 286,522, 11-4-86, Cl. D12-146.000.
Havis, Michael R. Container holder. 286,509, 11-4-86, Cl. D9-455.000.
Higgins, Harry R.; and Pell, Paul N. Zipper tool. 286,461, 11-4-86, Cl. D11-221.000.
Hirose, Mutsuo: *See—*
Komuro, Katsusuke; Yamada, Toshiyuki; and Hirose, Mutsuo, 286,519, Cl. D12-110.000.
Holland, A. Ronald: *See—*
Case, Robert; Holland, A. Ronald; and Kennedy, Joe H., 286,481, Cl. D6-510.000.
Holloman, Charles J.; and Bunin, Elinor B., to Trans-Lux Corporation. Display printer. 286,534, 11-4-86, Cl. D14-111.000.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Komuro, Katsusuke; Yamada, Toshiyuki; and Hirose, Mutsuo, 286,519, Cl. D12-110.000.
Kuwahata, Shoichi; and Tanaka, Norio, 286,520, Cl. D12-110.000.
Tanaka, Masatoshi; and Kuwahata, Shoichi, 286,521, Cl. D12-110.000.
Honermann, Roy A. Display cabinet. 286,484, 11-4-86, Cl. D6-559.000.
Hong Nin Metal Works Factory Co. Ltd.: *See—*
Lai, Fu Hong, 286,515, Cl. D11-3.000.
Hoyt, John G. Watercraft or similar article. 286.529, 11-4-86, Cl. D12-305.000.
Hsieh, James C. Pocket electric eraser. 286,548, 11-4-86, Cl. D19-53.000.
Hukuhara, Naoshige: *See—*
Morimoto, Yoshinori; Hukuhara, Naoshige; and Tachibana, Takaaki, 286,528, Cl. D12-300.000.
Hussey, Richard: *See—*
Loesser, Ernest W.; and Hussey, Richard, 286,504, Cl. D9-302.000.
Hydro-Spa Inc.: *See—*
Kingsley, Robert C., 286,568, Cl. D24-38.000.
Ichikawa, Shinpei, to Timex Corporation. Wristwatch. 286,512, 11-4-86, Cl. D10-38.000.

Inaba, Takao: *See—*
Koizumi, Masashi; and Inaba, Takao, 286,547, Cl. D19-51.000.
Ishii, Kenshun: *See—*
Nakao, Shinroku; Ishii, Yoshiyasu; and Ishii, Kenshun, 286,569, Cl. D24-54.000.
Ishii, Yoshiyasu: *See—*
Nakao, Shinroku; Ishii, Yoshiyasu; and Ishii, Kenshun, 286,569, Cl. D24-54.000.
Jablonski, Vincent. Cello and string bass bow grip. 286,543, 11-4-86, Cl. D17-20.000.
Jakub, Susan M. Dispensing cap for an eyedrop bottle. 286,571, 11-4-86, Cl. D24-63.000.
Jaques, Diane H.: *See—*
Jaques, Michael J.; and Jaques, Diane H., 286,500, Cl. D8-98.000.
Jaques, Michael J.; and Jaques, Diane H. Hole punch with ejector for plastic tubing. 286,500, 11-4-86, Cl. D8-98.000.
John Manufacturing Limited: *See—*
Yuen, John S., 286,550, Cl. D19-75.000.
Yuen, John S., 286,577, Cl. D26-42.000.
Johnson & Johnson Baby Products Company: *See—*
Williams, David M.; and Simpson, Danny E., 286,556, Cl. D21-65.000.
Kelly, Thomas J.: *See—*
Felix, Cristian J.; Kelly, Thomas J.; Nelson, Richard F., Jr.; Sylvester, Gordon E.; and Tyler, Daniel W., 286,533, Cl. D14-106.000.
Kennedy, Joe H.: *See—*
Case, Robert; Holland, A. Ronald; and Kennedy, Joe H., 286,481, Cl. D6-510.000.
Kent Heating Limited: *See—*
Saunders, Jolyon D., 286,575, Cl. D25-88.000.
Kilenstam, Bjorn, to AB Profilproduktor. Foldable trestle. 286,573, 11-4-86, Cl. D25-67.000.
King, William L.; and Workman, David E., to Samsonite Corporation. Luggage case. 286,466, 11-4-86, Cl. D3-77.000.
Kingsley, Robert C., to Hydro-Spa Inc. Whirlpool bathing shell. 286,568, 11-4-86, Cl. D24-38.000.
Koizumi, Masashi; and Inaba, Takao, to Pilot Ink Co., Ltd., The. Pen. 286,547, 11-4-86, Cl. D19-51.000.
Komuro, Katsusuke; Yamada, Toshiyuki; and Hirose, Mutsuo, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle. 286,519, 11-4-86, Cl. D12-110.000.
Krokaugger, William G., to Mole-Richardson Co. Spotlight. 286,578, 11-4-86, Cl. D26-63.000.
Kupferberg, Minel. Back draft shutter. 286,563, 11-4-86, Cl. D23-112.000.
Kuwahata, Shoichi; and Tanaka, Norio, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle. 286,520, 11-4-86, Cl. D12-110.000.
Kuwahata, Shoichi: *See—*
Tanaka, Masatoshi; and Kuwahata, Shoichi, 286,521, Cl. D12-110.000.
Kwok, King H.: *See—*
Drucker, Alan S.; and Kwok, King H., 286,565, Cl. D23-155.000.
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LIST OF PLANT PATENTEES

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Ono, Toshiaki, to Mitsuwa Nursery, Inc. Gazania plant called Mitsuwa Orange. 5,796, 11-4-86, Cl. 68.000.

Slocum, Perry D. Lotus plant CV Maggie Belle Slocum. 5,798, 11-4-86, Cl. 68.000.

LIST OF STATUTORY INVENTION REGISTRATIONS

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AT&T Bell Laboratories: *See—*
Feldman, Leonard C.; Focht, Marlin W.; Macrander, Albert T.; and Schwartz, Bertram, H147, Cl. 357-47.000.

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Boyce, Gary L.; and Blackburn, Grat E., to United States of America, Army. Flash prefire detector. H154, 11-4-86, Cl. 378-98.000.

Byrd, Joe L., to United States of America, Army. Dual area tangent piston. H166, 11-4-86, Cl. 92-138.000.

Cawley, William E., to United States of America, Energy. On-line temperature sensor. H149, 11-4-86, Cl. 376-247.000.

Childress, James J., to United States of America, Navy. Fluid connection. H155, 11-4-86, Cl. 285-189.000.

Du Pont de Nemours, E. I., and Company: *See—*
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Kaszas, Leo R.; Kendrew, Robert J.; and Shutts, David K., to United States of America, Navy. Shaped trajectory cruise missile launch mode. H159, 11-4-86, Cl. 244-3.210.

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Ozawa, Takashi; and Hirano, Tsumoru, to Fuji Photo Film Co., Ltd. Silver halide color light-sensitive material. H156, 11-4-86, Cl. 430-548.000.

Perry, John S., to United States of America, Army. Integral structural warhead shell. H160, 11-4-86, Cl. 102-494.000.

Rouse, William G.; Sofinowski, Jacob; and Morin, Ronald J., to United States of America, Army. Powdery cloud disperser. H151, 11-4-86, Cl. 239-654.000.

Sadler, Donald M.; and Staunton, Harold F., to Du Pont de Nemours, E. I., and Company. Method for applying liquid to yarn. H153, 11-4-86, Cl. 427-57.000.

Savioli, Giulio, to United States of America, Army. High capacity magazine for weapons. H164, 11-4-86, Cl. 89-33.020.

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CLASSIFICATION OF PATENTS

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394	4,620,393

CLASS 51

163.2	4,620,394
241 VS	4,620,395

CLASS 52

3	4,620,396
66	4,620,397
169.1	4,620,398
172	4,620,399
227	4,620,400
309.15	4,620,401
410	4,620,402
480	4,620,403
602	4,620,404
645	4,620,405
704	4,620,406
741	4,620,407

CLASS 53

77	4,620,408
551	4,620,409
561	4,620,410
570	4,620,411

CLASS 55

73	4,620,856
75	4,620,857
222	4,620,858
385 A	4,620,869

CLASS 57

6	4,620,412
261	4,620,413

CLASS 60

39.34	4,620,414
219	4,620,415
384	4,620,416
431	4,620,417
517	4,620,418
560	4,620,419
602	4,620,420

CLASS 62

3	4,620,421
70	4,620,422
77	4,620,423
222	4,620,424
230	4,620,425
457	4,620,426

CLASS 65

2	4,620,859
3.12	4,620,861
3.4	4,620,860
18.1	4,620,862
30.12	4,620,863
114	4,620,864

CLASS 69

47	4,620,427

CLASS 70

175	4,620,428
383	4,620,429
431	4,620,430

CLASS 71

67	4,620,865
88	4,620,866
	4,620,867
90	4,620,868
91	4,620,870
92	4,620,871
	B1 4,474,600

CLASS 72

31	4,620,431
73	4,620,432
286	4,620,433
347	4,620,434
389	4,620,435

CLASS 73

1 B	4,620,436
23	4,620,437
35	4,620,438
40.7	4,620,439
118.1	4,620,440
327	4,620,441
517 R	4,620,442
606	4,620,443
	4,620,444
647	4,620,445
652	4,620,446
662	4,620,447
861.71	4,620,448
862.21	4,620,449
862.23	4,620,450
863.24	4,620,451
864.21	4,620,452

CLASS 74

476	4,620,453
567	4,620,454
798	4,620,455
800	4,620,456
	4,620,457

CLASS 75

246	4,620,872

CLASS 81

57.28	4,620,458
57.29	4,620,459
124.4	4,620,460
461	4,620,461
462	4,620,462

CLASS 82

1 C	4,620,463
1.2	4,620,464

CLASS 83

74	4,620,465
177	4,620,466
389	4,620,467
524	4,620,468

CLASS 84

1.24	4,620,469
314 R	4,620,470
480	4,620,471

CLASS 86

27	4,620,472

CLASS 87

48	4,620,473

CLASS 91

418	4,620,474
499	4,620,475

CLASS 99

484	4,620,476
486	4,620,477
533	4,620,478

CLASS 100

215	4,620,479

CLASS 101

179	4,620,480
350	4,620,481
415.1	4,620,482

CLASS 102

222	4,620,483
395	4,620,484
444	4,620,485

CLASS 104

121	4,620,486

CLASS 105

2 R	4,620,487

CLASS 106

1.17	4,620,873
21	4,620,874
22	4,620,875
	4,620,876
23	4,620,877
287.15	4,620,878
304	4,620,879

CLASS 108

46	4,620,488
105	4,620,489

CLASS 110

173 R	4,620,490
185	4,620,491
345	4,620,492
346	4,620,493

CLASS 112

121.15	4,620,494
262.1	4,620,495
445	4,620,496
453	4,620,497

CLASS 114

106	4,620,498
218	4,620,499
297	Re.32,274

CLASS 116

268	4,620,500

CLASS 118

67	4,620,501
419	4,620,502
505	4,620,503

CLASS 119

35	4,620,504
51.11	4,620,505
117	4,620,506

CLASS 122

6 B	4,620,507
7 R	4,620,508

CLASS 123

41.1	4,620,509
90.6	4,620,510
145 A	4,620,511
	4,620,512
146.5 A	4,620,513
202	4,620,514
233	4,620,515
275	4,620,516
339	4,620,517
425	4,620,518
492	4,620,519
571	4,620,520
599	4,620,521
617	4,620,522

CLASS 124

35 A	4,620,523
	4,620,524

CLASS 125

13 R	4,620,525

CLASS 126

56	4,620,526

CLASS 127

60	4,620,880

CLASS 128

1 R	Re.32,275
4	4,620,527
62 A	4,620,528
66	4,620,529
75	4,620,530
79	4,620,531
80 C	4,620,532
92 Z	4,620,533
127	4,620,534
134	4,620,535
200.24	4,620,536
201.13	4,620,537
201.23	4,620,538
303 B	4,620,540
303 R	4,620,539
326	4,620,541
328	4,620,545
335.5	4,620,542
352	4,620,544
419 F	4,620,543
660	4,620,546
754	4,620,547
758	4,620,548
763	4,620,549
785	4,620,550

CLASS 131

75	4,620,551
84.3	4,620,552
198.1	4,620,553
270	4,620,554
	4,620,555
313	4,620,556
336	4,620,557

CLASS 132

76.4	B1 3,809,101
79	4,620,558

CLASS 133

3 A	4,620,559

CLASS 134

21	4,620,881

CLASS 137

116	4,620,560
116.3	4,620,561
315	4,620,562
572	4,620,563
595	4,620,564
596.17	4,620,565
613	4,620,566
627.5	4,620,567
899.4	4,620,568

CLASS 138

132	4,620,569

CLASS 139

435	4,620,570

CLASS 140

102	4,620,571
105	4,620,572
123	4,620,573
124	4,620,574

CLASS 141

1	4,620,576
98	4,620,577

CLASS 144

2 Z	4,620,578

CLASS 148

6.2	4,620,882
13	4,620,883
128	4,620,884
435	4,620,885
439	4,620,886

CLASS 150

52 J	4,620,579

CLASS 152

153	4,620,580

CLASS 156

64	4,620,887
	4,620,888
166	4,620,889
196	4,620,890
212	4,620,891
319	4,620,892
345	4,620,893
	4,620,894
461	4,620,895
471	4,620,896
602	4,620,897
643	4,620,898

CLASS 160

187	4,620,581

CLASS 162

344	4,620,899

CLASS 164

5	4,620,582
154	4,620,583
160.1	4,620,584
169	4,620,585
253	4,620,586
475	4,620,587

CLASS 165

32	4,620,588
95	4,620,589
150	4,620,590

CLASS 166

63	4,620,591
245	4,620,592
248	4,620,593
263	4,620,594
275	4,620,595
292	4,620,596
373	4,620,597

CLASS 169

30	4,620,598

CLASS 172

42	4,620,599

CLASS 174

65 R	4,621,166
70 S	4,621,167
88 C	4,621,168
106 SC	4,621,169

CLASS 175

73	4,620,600
107	4,620,601

CLASS 177

25	Re.32,276

CLASS 180

9.21	4,620,602
19.1	4,620,603
190	4,620,604
307	4,620,575

CLASS 181

135	4,620,605
170	4,620,606
229	4,620,607

CLASS 182

17	4,620,608
92	4,620,609
	4,620,610
106	4,620,611
113	4,620,612
153	4,620,613

CLASS 187

8.72	B1 4,365,692
9 E	4,620,614
22	4,620,615

CLASS 188

71.6	4,620,616
196 BA	4,620,617
	4,620,618
319	4,620,619
	4,620,620

CLASS 192

0.076	4,620,624
3.31	4,620,621
36	4,620,622
53 E	4,620,623
85 CA	4,620,625
106.2	4,620,626

CLASS 198

580	4,620,627
790	4,620,628
836	4,620,629

CLASS 200

5 R	4,621,174
335	4,621,175

CLASS 202

172	4,620,900

CLASS 203

51 4,620,901

CLASS 204

1 R 4,620,902
4 4,620,903
58.4 4,620,904
64 R 4,620,905
73 R 4,620,906
157.22 4,620,909
157.44 4,620,907
157.68 4,620,908
182.4 4,620,910
4,620,911
4,620,912
192 R 4,620,913
265 4,620,914
284 4,620,915
299 R 4,620,916
302 4,620,917
403 4,620,918

CLASS 206

45.24 4,620,630
217 4,620,631
329 4,620,632
523 4,620,633

CLASS 208

45 4,620,919
86 4,620,920
111 4,620,921
254 H 4,620,922

CLASS 209

44.3 4,620,634
223 R 4,620,923

CLASS 210

169 4,620,924
219 4,620,925
221.2 4,620,926
236 4,620,927
500.29 Re.32,277
603 4,620,928
610 4,620,929
614 4,620,930
617 4,620,931
808 4,620,932

CLASS 211

47 4,620,635
126 4,620,636
188 4,620,637

CLASS 215

1 C 4,620,639
11 R 4,620,638
217 4,620,640

CLASS 219

8.5 4,621,176
10.49 A 4,621,177
10.55 A 4,621,179
10.55 B 4,621,178
10.55 R 4,621,180
62 4,621,181
85 BM 4,621,182
121 PL 4,621,183
121 PY 4,621,184
124.34 4,621,185
330 4,621,186
358 4,621,187

CLASS 220

288 4,620,641
307 4,620,642
316 4,620,643
334 4,620,644

CLASS 222

146.2 4,620,645
153 4,620,646
215 4,620,647
490 4,620,648

CLASS 223

40 4,620,649
43 4,620,650
88 4,620,651
107 4,620,652

CLASS 224

242 4,620,653
243 4,620,654

CLASS 226

109 4,620,655

CLASS 227

5 4,620,656
147 4,620,657
152 4,620,658

CLASS 228

20 4,620,659
44.7 4,620,663
186 4,620,660
209 4,620,661
227 4,620,662

CLASS 229

17 R 4,620,664
43 4,620,665
149 4,620,666

CLASS 235

382 4,621,188
472 4,621,189
492 4,621,190

CLASS 236

20 R 4,620,667
46 R 4,620,668

CLASS 239

120 4,620,669
338 4,620,670

CLASS 241

19 4,620,671
21 4,620,672
69 4,620,673
121 4,620,674
261.3 4,620,675

CLASS 242

77 4,620,676
107.6 4,620,677
195 4,620,678

CLASS 244

53 B 4,620,679
137 A 4,620,680

CLASS 248

95 4,620,681
96 4,620,682
97 4,620,683
225.2 4,620,684
349 4,620,685
415 4,620,686
447.2 4,620,687
542 4,620,688

CLASS 250

201 4,621,191
225 4,621,192
302 4,621,193
367 4,621,194
438 4,621,195
483.1 4,621,196

CLASS 251

7 4,620,689
8 4,620,690

CLASS 252

62.54 4,620,933
79.4 4,620,934
99 4,620,935
4,620,936
143 4,620,937
299.63 4,620,938
301.17 4,620,939
373 4,620,940
408.1 4,620,941
500 4,620,942
518 4,620,943
4,620,944
522 R 4,620,945
545 4,620,946
628 4,620,947

CLASS 254

16 4,620,691
277 4,620,692
335 4,620,693

CLASS 260

505 R 4,620,950
525 4,620,949

CLASS 261

44.3 4,620,951
114 R 4,620,952
142 4,620,953

CLASS 264

1.4 4,620,954
41 4,620,955
145 4,620,956
247 4,620,957
297.2 4,620,958
335 4,620,959

CLASS 267

64.15 4,620,694

CLASS 269

24 4,620,695
32 4,620,696
328 4,620,697
4,620,698

CLASS 271

245 4,620,699

CLASS 272

33 R 4,620,700
63 4,620,701
85 4,620,702
129 4,620,703
135 4,620,704

CLASS 273

73 A 4,620,705
122 R 4,620,706
148 B 4,620,707
192 4,620,708
264 4,620,709

CLASS 277

235 B 4,620,710

CLASS 280

30 4,620,711
47.2 4,620,712
152.3 4,620,713
242 R 4,620,714
269 4,620,715
414.1 4,620,716
432 4,620,717
507 4,620,718
633 4,620,719
666 4,620,720
735 4,620,721
814 4,620,722
821 4,620,723

CLASS 281

15 R 4,620,724
45 4,620,725

CLASS 282

1 R 4,620,726

CLASS 283

82 4,620,727

CLASS 285

14 4,620,728
158 4,620,729
166 4,620,730
363 4,620,731
368 4,620,732

CLASS 290

38 R 4,621,197

CLASS 292

39 4,620,733
142 4,620,734
144 4,620,735

CLASS 293

116 4,620,736

CLASS 294

19.1 4,620,737
64.1 4,620,738
65.5 4,620,739
159 4,620,740

CLASS 296

37.14 4,620,741
97 K 4,620,742
146 4,620,743
155 4,620,744
198 4,620,745
201 4,620,746

CLASS 297

440 4,620,747

CLASS 299

18 4,620,748

CLASS 301

37 SA 4,620,749

CLASS 303

114 4,620,750

CLASS 307

82 4,621,198
130 Re.32,278
147 4,621,199
149 4,621,200
219 4,621,201
241 4,621,202
306 4,621,203
311 4,621,204
320 4,621,205
350 4,621,206
451 4,621,207
473 4,621,208
511 4,621,209

CLASS 310

61 4,621,210
90.5 4,620,752
232 4,621,211
260 4,621,212

CLASS 312

29 4,620,753
330 R 4,620,754

CLASS 313

237 4,621,213
318 4,621,220
402 4,621,214
422 4,621,215
613 4,621,216

CLASS 315

1 4,621,217
3.6 4,621,218
5 4,621,219

CLASS 318

123 4,621,221
146 4,621,222
282 4,621,223
594 4,621,224

CLASS 320

21 4,621,225

CLASS 324

58 B 4,621,226
60 CD 4,621,227
61 R 4,621,228
65 R 4,621,229
110 4,621,230
142 4,621,231
158 R 4,621,232
4,621,233
306 4,621,234
307 4,621,235
319 4,621,236
322 4,621,237

CLASS 330

254 4,621,238

CLASS 331

99 4,621,239
113 R 4,621,240
117 R 4,621,241

CLASS 333

17 M 4,621,242
24 R 4,621,243
81 A 4,621,244
202 4,621,245

CLASS 335

42 Re.32,279
78 4,621,246
202 4,621,247

CLASS 336

178 4,621,248

CLASS 338

35 4,621,249
162 4,621,250
302 4,621,251

CLASS 339

14 L 4,620,755
17 C 4,620,757
17 M 4,620,756
22 B 4,620,758
45 M 4,620,759
4,620,760
75 MP 4,620,761
91 R 4,620,762
94 R 4,620,763
145 T 4,620,764
154 A 4,620,765
217 S 4,620,766
255 P 4,620,767

CLASS 340

61 4,621,252
84 4,621,253
347 AD 4,621,255
347 M 4,621,254
347 P 4,621,256
365 P 4,621,257
567 4,621,258
707 4,621,259
719 4,621,260
825.52 4,621,261
825.69 4,621,262
870.07 4,621,263

CLASS 342

124 4,621,264
169 4,621,265
359 4,621,266
462 4,621,267

CLASS 346

1.1 4,621,268
74.4 4,621,269
76 PH 4,621,270
4,621,271
134 4,621,272
140 R 4,621,273
153.1 4,621,274

CLASS 350

6.8 4,620,768
96.26 4,620,769
132 4,620,770
258 4,620,771
337 4,620,772
432 4,620,773
449 4,620,775
461 4,620,774
529 4,620,776
582 4,620,777

CLASS 351

51 4,620,778
211 4,620,779

CLASS 354

286 4,620,780

CLASS 355

3 R 4,620,781
14 D 4,620,783
14 SH 4,620,782
27 4,620,784
53 4,620,785
72 4,620,786
76 4,620,787

CLASS 356

5 4,620,788
73.1 4,620,789
124 4,620,790
402 4,620,792
420 4,620,791

CLASS 357

30 4,621,275
42 4,621,276
54 4,621,277
70 4,621,278
83 4,621,279

CLASS 358

22 4,621,280
60 4,621,281
86 4,621,282
93 4,621,283
98 4,621,284
120 4,621,285
141 4,621,286
4,621,287
153 4,621,288
4,621,289
166 4,621,290
213 4,621,291
227 4,621,292
231 4,621,293
237 4,621,294

CLASS 360

99 4,621,295
121 4,621,296
132 4,621,297

CLASS 361

38 4,621,298
151 4,621,299
175 4,621,300
314 4,621,301
315 4,621,302
338 4,621,303
386 4,621,304
398 4,621,305

CLASS 362

29 4,621,306
66 4,621,307
154 4,621,308
342 4,621,309
344 4,621,310

CLASS 363

21 4,621,311
26 4,621,312
49 4,621,313
54 4,621,314
60 4,621,315
132 4,621,316

CLASS 364

147 4,621,317
200 4,621,318
4,621,319
4,621,320
4,621,321
4,621,322
4,621,323
4,621,324
406 4,621,325
408 4,621,326
424 4,621,327
424.1 4,621,328
455 4,621,329
483 4,621,330
513 4,621,331
4,621,332
4,621,333
550 4,621,334
4,621,335
557 4,621,336
727 4,621,337
784 4,621,338
900 4,621,339
4,621,340
4,621,341
4,621,342
4,621,343

CLASS 365

36 4,621,344
205 4,621,345
227 4,621,346

CLASS 366

76 4,620,793
131 4,620,794
241 4,620,795
344 4,620,796

CLASS 367

21 4,621,347
116 4,621,348

CLASS 368

21 4,620,797
276 4,620,798

CLASS 369

25 4,621,349
29 4,621,350
44 4,621,351
54 4,621,352
112 4,621,353

CLASS 370

13 4,621,354
19 4,621,355
24 4,621,170
32.1 4,621,172
4,621,173
56 4,621,358
58 4,621,357
60 4,621,359
85 4,621,360
4,621,361
88 4,621,362

CLASS 371

25 4,621,363
38 4,621,364

CLASS 374

5 4,620,799
132 4,620,800

CLASS 375

1 4,621,365
8 4,621,366
36 4,621,367
40 4,621,368

CLASS 376

446 4,620,960

CLASS 377

60 4,621,369
106 4,621,370

CLASS 378

34 4,621,371

CLASS 379

98 4,621,356

CLASS 381

113 4,621,171

CLASS 383

17 B1 4,307,764

CLASS 384

19 4,620,801
44 4,620,751
53 4,620,802
93 4,620,803
275 4,620,804
297 4,620,805
572 4,620,806

CLASS 400

56 4,620,807
83 4,620,808
624 4,620,809
689 4,620,810

CLASS 401

65 4,620,811

CLASS 402

68 4,620,812

CLASS 403

93 4,620,813
314 4,620,814

CLASSIFICATION OF PATENTS

405.1 4,620,815

CLASS 404

6 4,620,816

CLASS 405

43 4,620,817
169 4,620,818
185 4,620,819
224 4,620,820

CLASS 407

1 4,620,821

CLASS 408

224 4,620,822

CLASS 409

178 4,620,823
233 4,620,824

CLASS 411

34 4,620,825

CLASS 414

73 4,620,826
114 4,620,827
684.3 4,620,828
720 4,620,829
735 4,620,830
744 A 4,620,831
786 4,620,832

CLASS 415

211 4,620,833

CLASS 416

32 4,620,834

CLASS 417

17 4,620,835
364 4,620,836

CLASS 418

173 4,620,837

CLASS 420

542 4,620,961

CLASS 422

24 4,620,962
46 4,620,965
240 4,620,963

CLASS 423

27 4,620,964
185 4,620,966
236 4,620,967
299 4,620,968
421 4,620,969

579 4,620,970

CLASS 424

1.1 4,620,971
4,620,972
10 4,620,973
37 4,620,974
70 4,620,976
88 4,620,977
89 4,620,978
153 4,620,979

CLASS 425

135 4,620,838
145 B1 4,406,605
405 H 4,620,839

CLASS 426

330.5 4,620,980
448 4,620,981
658 4,620,982

CLASS 427

8 4,620,983
9 4,620,984
55 4,620,985
93 4,620,986
131 4,620,987
223 4,620,988
289 4,620,989
291 4,620,990
294 4,620,991
362 4,620,992
407.1 4,620,993
4,620,994
420 4,620,995
430.1 4,620,996
434.3 4,620,997

CLASS 428

33 4,620,998
35 4,620,999
40 4,621,000
49 4,621,001
71 4,621,002
4,621,003
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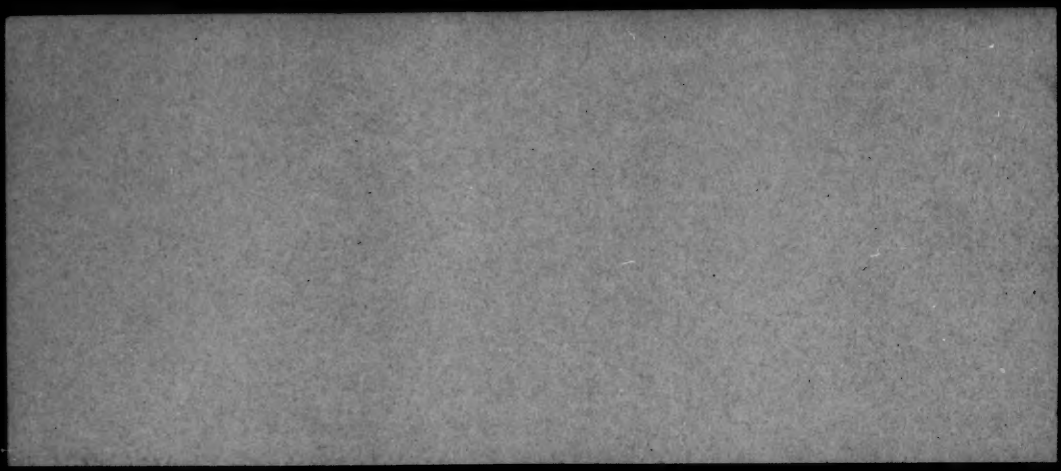

U.S. DEPARTMENT OF COMMERCE
Malcolm Baldrige, *Secretary*
PATENT AND TRADEMARK OFFICE
Donald J. Quigg, *Commissioner*